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Volume 19 July 1950 Number 7

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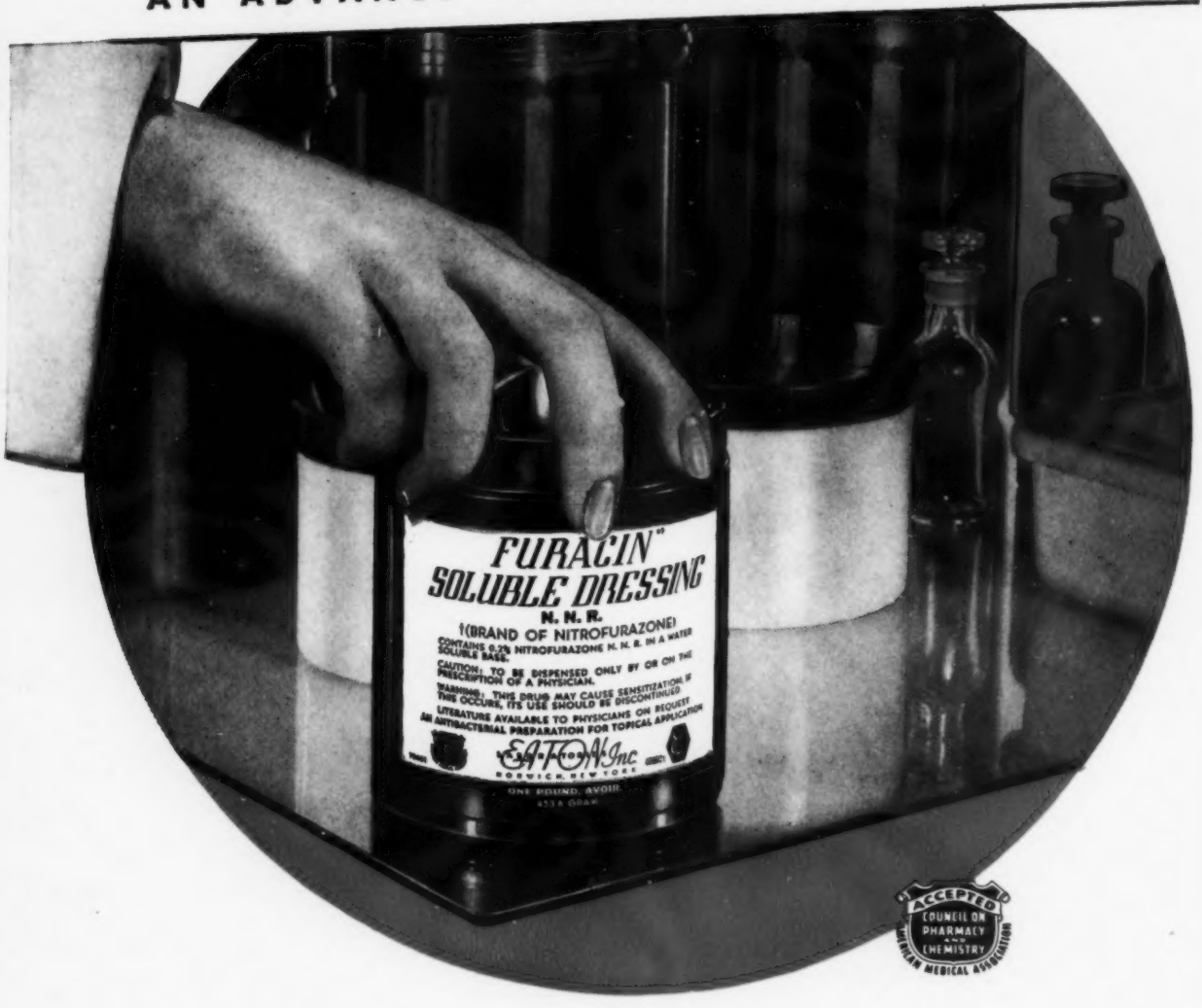
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This magazine is published to promote sound thought concerning industrial medicine and the surgery of trauma. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

Volume 19 JULY 1950 *Number 7*

CONTENTS

EVOLUTION OF SMALL PLANT HEALTH SERVICE AS A PRIVATE PRACTICE
Forrest E. Rieke, M.D. 301

SOLVING THE SOLVENT PROBLEM
Robert A. Kehoe, M.D. 313

CYCLOHEXYLAMINE, p-CHLORNITROBENZENE, 2-AMINOPYRIDINE: TOXIC EFFECTS IN INDUSTRIAL USE
R. M. Watrous, M.D., and H. N. Schulz 317

THE TOXICOLOGIST AND INDUSTRIAL TOXICOLOGY
W. J. R. Camp, M.D. 321

MEDICOLEGAL AND SOCIAL PROBLEMS OF NON-OCCUPATIONAL TEMPORARY DISABILITY BENEFITS
Mary Donlon 323

THE DETROIT PLAN FOR FIRST AID AND EMERGENCY MEDICAL SERVICES IN SMALL PLANTS
William G. Fredrick and Esther W. Kilmer, R.N. 326

WHO'S WHO IN INDUSTRIAL MEDICINE
Profile of Loyal A. Shoudy, M.D. 329

ASSOCIATION NEWS 335

EDITORIAL:
SUNBURNS AND SKIN TANNING 339
MEN AND MACHINES 339
"THE COST OF BEING RIGHT-MINDED" 340

ASSOCIATIONS: OFFICERS AND DIRECTORS 4, 6, 8, 10
PERSONAL 6
NEWS, COMMENT, OPINION 27
(ADVERTISERS' INDEX ..... 40)

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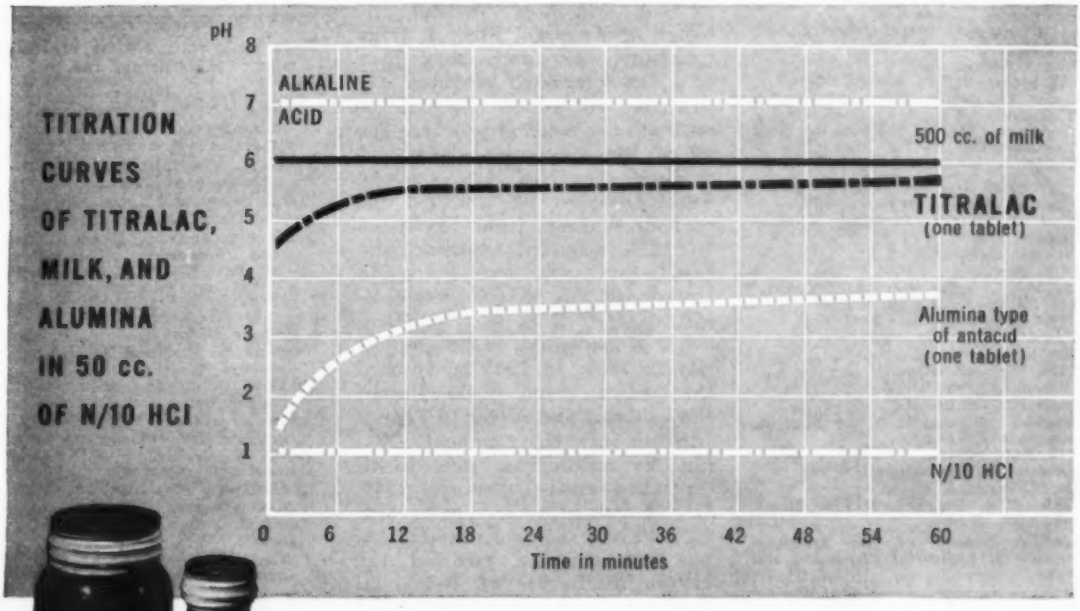

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1. Rossett, N. E., and Flexner, J.: Ann. Int. Med. 18: 193 (1944). 2. Freezer, C. R. E.; Gibson, C. S., and Matthews, E.: Guy's Hosp. Reports 78: 191 (1928). 3. Aaron, A. H.; Lipp, W. F., and Milch, E.: J. A. M. A. 139: 514 (Feb. 19) 1949. 4. Kirsner, J. B., and Palmer, W. L.: Illinois M. J. 94: 357 (Dec.) 1948. 5. Kimball, S.: in Practice of Medicine (Tice). Hagerstown, Md., W. F. Prior Company, Inc., 1948; p. 210. 6. Special Article: M. Times 76: 10 (Jan.) 1948.

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NEWS

ARTHUR M. EDWARDS, M.D., has been appointed Medical Director of Americal Steel & Wire Company, Cleveland, Ohio. This is a newly created position. DR. EDWARDS will administer and coordinate the medical program for all of the company's plants, including those of the Cyclone Fence Division. DR. EDWARDS was born in Warren, Ohio, December 19, 1905, attended Lawrenceville Schol for Boys, and Princeton University, and received his medical degree from the Medical Schol of Louisiana State University in 1938. In 1940 he entered the medical crops of the United States Army and served in France with an infantry regiment. During his military service, which continued until December, 1945, he had wide experience in general medical and surgical practice. DR. EDWARDS recently received the degree of Doctor of Industrial Medicine from the University of Cincinnati, one of the few such degrees awarded in the United States. He will maintain his office at the company's headquarters in the Rockefeller Building, Cleveland.

ANTHONY J. LANZA, M.D., Chairman, Institute of Industrial Medicine, New York University-Bellevue Medical Center, has been elected Secretary of the board of directors of the New York Tuberculosis and Health Association. DR. LANZA succeeds MR. MYRON I. BORG, JR., who resigned to become Chairman of the association's executive committee.

B. E. KUECHLE, Vice-President, Employers Mutual Liability Insurance Company, and a member of the Board of Trustees and the Legal Committee of Industrial Hygiene Foundation, has been elected First Vice-President of the National Tuberculosis Association.

FREDERICK S. MALLETTE, was appointed Assistant Director of Research, Air and Stream Pollution, by American Steel and Wire Company, effective May 1, 1950. MR. MALLETTE, formerly on the staff of Industrial Hygiene Foundation, has since been Industrial Hygienist and Toxicologist for Firestone Tire and Rubber Company. He will continue to serve Firestone as a consultant.

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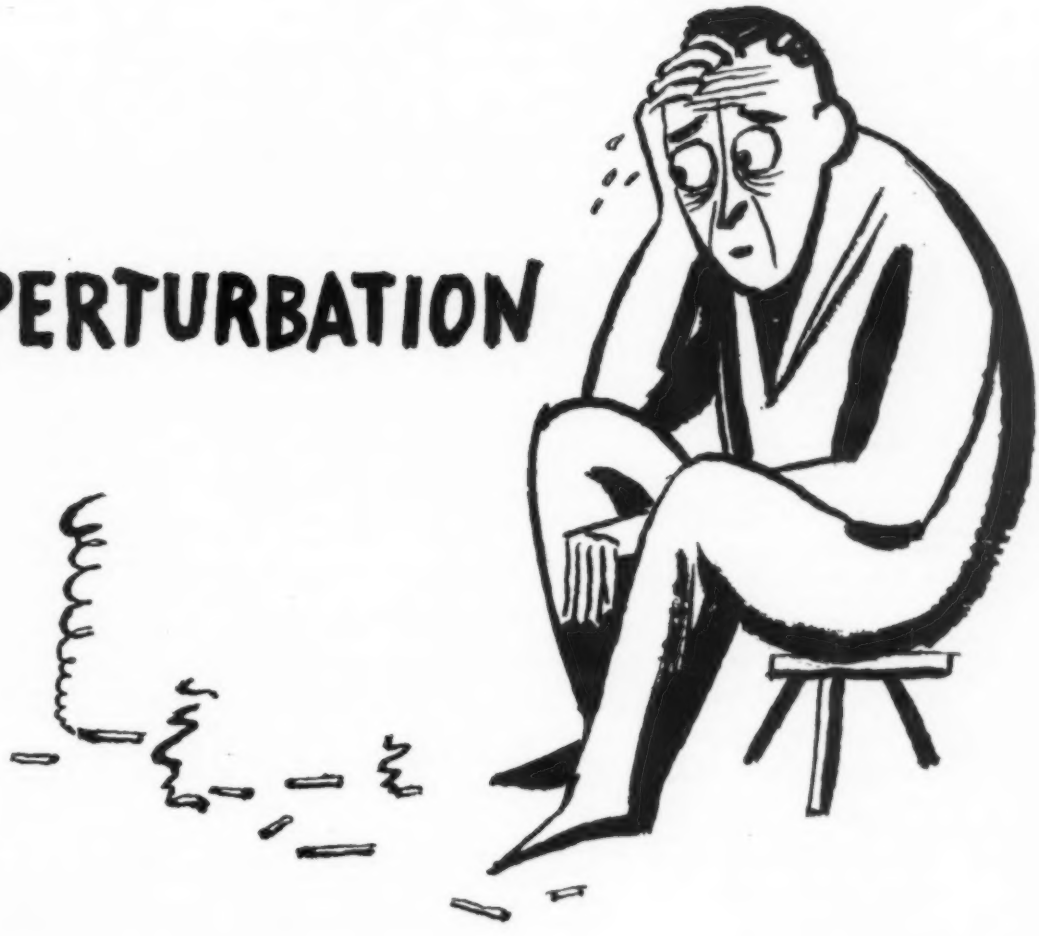

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T. LYLE HAZLETT, M.D., has been appointed by Pennsylvania's Governor James H. Duff to head a Medical Appeal Board to pass on disputes in occupational disease compensation. The Board is empowered to examine applicants for occupational disease benefits to determine the exact state of their health for the state workmen's compensation board. The findings of the Board are conclusive except that on court appeals a question may be entered as to whether the findings are based upon sufficient evidence. DR. HAZLETT, long a member of the Medical Committee of Industrial Hygiene Foundation, retired as Medical Director of Westinghouse Electric Corporation recently. Also named to the Board by Governor Duff are DR. EUGENE P. PENDERGRASS, a member of the Foundation's Medical Committee and x-ray authority of the University of Pennsylvania, and DR. PETER A. HERBUT, pathologist, of Drexel Hill.

COLONEL A. D. TUTTLE, M.D., Medical Director for United Air Lines, was formally installed as President of the Aero Medical Association at its Twenty-First Annual Convention in Chicago, May 31. He will preside at the next Annual Convention in Denver.

RUTHERFORD T. JOHNSTONE, M.D., Consultant in Occupational Diseases and Industrial Health, has moved his offices to 520 West Seventh St., Los Angeles, California. This new location is just two blocks from his previous address.

THE eighth annual session of the Yale Summer School of Alcohol Studies will be held at Yale University from July 8 to August 4, 1950, acording to DR. HOWARD W. HAGGARD, Director of the Yale Laboratory of Applied Physiology. This year, DR. HAGGARD pointed out, a new emphasis will be placed on the particular problems of alcoholism in industry, with a special workshop for those engaged in personnel work. During the year, the Section on Alcohol Studies has developed an educational program for industry, since that subject has assumed increasing importance. The Yale program is now in operation in Wisconsin, with the cooperation of the Wisconsin Bureau of Alcoholic Studies.

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PROTEIN	70 Gm.	7.1 Gm.	10
CALCIUM	1 Gm.	0.156 Gm.	16
IRON	12 mg.	1.6 mg.	13
PHOSPHORUS	1.5 Gm.	0.206 Gm.	14
VITAMIN A	5000 I.U.	193 I.U.	4
THIAMINE	1.5 mg.	0.17 mg.	11
RIBOFLAVIN	1.8 mg.	0.24 mg.	13
NIACIN	15 mg.	1.4 mg.	9
CALORIES	3000	202	7

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**1 oz. of breakfast cereal, 4 oz. of milk, 1 teaspoonful of sugar. Based on composite average of all breakfast cereals on dry weight basis.

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63rd Annual Meeting, April 3-5, 1951, at the Drake Hotel, Chicago

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LYMAN D. HEACOCK, D.D.S., U.S. Veterans Hospital, Nashville, Tennessee.
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1951

C. RUSSELL FRICKE, D.D.S., Philadelphia Company, Pittsburgh, Pennsylvania.
J. H. FREDERICK, D.D.S., E. I. du Pont Company, Wilmington, Delaware.

1952

V. J. FORNEY, D.D.S., M.P.H., 4604 S. Chelsea Lane, Bethesda, Maryland.

Aero Medical Association of the United States; Secretary: DR. D. S. BRACHMAN, 1016 Dime Bldg., Detroit 24, Mich.

American Academy of Occupational Medicine: Secretary, JAMES J. CARLISLE, M.D., 550 Hillcrest, Westfield, N. J.

American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C.

American Association of Industrial Nurses, 654 Madison Ave., New York 21, N. Y. GLADYS L. DUNDORE, R.N., Executive Secretary.
April 21-27, 1951, Atlantic City.

American Association of Railway Surgeons, 5800 Stony Island Ave., Chicago 37, Illinois. CHESTER C. GUY, M.D., Secretary.
April 3-5, 1951, Chicago.

American Chemical Society, 1155 Sixteenth St., N.W., Washington 6, D.C. A. H. EMERY, Secretary.

Recent Deaths

FREDERICK G. BARR, M.D., 64, Medical Director, National Cash Register Company, Dayton, Ohio, 1916 to 1943, and Vice-President in charge of industrial relations since 1943. DR. BARR was born at Amanda, Ohio, in 1886; received his medical degree at Jefferson Medical College in 1916. He had been a Fellow, A.A.I.P.&S. since 1938; was a Director, 1945-'47.

MARCY J. LYONS, M.D., 60, Chief Surgeon New Orleans Public Service Inc., associated with the Public Service Company since 1933. He became a member of the A.A.I.P. & S. in 1941.

GEORGE NEVIN BEECHER, M.D., 62, Chicago. DR. BEECHER was born March 14, 1888, and had been in the practice of industrial medicine and surgery since 1912. He was a member of the CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY.

WAYLAND A. MORRISON, M.D., F.A.C.S., of Los Angeles, Chief Surgeon, Santa Fe Coast Lines Hospital. DR. MORRISON was a member of the WESTERN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS.

CHARLES BADGETT TRUETT, M.D., 33, Denison, Texas; Baylor University College of Medicine, Dallas, 1940; served during World War II; March 26, coronary thrombosis. DR. TRUETT was a member of the A.A.I.P. & S.

CHARLES LESTER HARSHBARGER, 54, of Norton, Virginia. DR. HARSHBARGER was a member of the ASSOCIATION OF MINE PHYSICIANS.

American College of Physicians, 4200 Pine St., Philadelphia 4, Pa. E. R. LOVELAND, Secretary.

American College of Surgeons, 40 East Erie St., Chicago 11, Ill.

American Conference of Governmental Industrial Hygienists, U. S. Public Health Service, Washington, D. C. J. J. BLOOMFIELD, Secy-Treas.
April 22-24, 1951, Atlantic City

American Industrial Hygiene Association 4400 Fifth Ave., Pittsburgh 13, Pa HENRY F. SMYTH, JR., Executive Secy.
April 23-26, 1951, Atlantic City.

American Medical Association, Council on Industrial Health, 535 North Dearborn St., Chicago 10, Ill. CARL M. PETERSON, M.D., Secretary.

American Public Health Association, 1790 Broadway, New York 19, N. Y. REGINALD M. ATWATER, M.D., Executive Secretary.

Association for the Surgery of Trauma.

Canadian Public Health Association, Vancouver, B. C., Canada.

Council on Industrial Health, American Medical Association; Secretary: CARL M. PETERSON, M.D., 535 N. Dearborn St., Chicago 10.

Industrial Hygiene Foundation of America, 4400 Fifth Ave., Pittsburgh 13, Pa. JOHN F. MCMAHON, Managing Director.

International Association of Industrial Accident Boards & Commissions, MARSHALL DAWSON, U.S. Dept. of Labor, Washington, D.C., Secretary-Treasurer.

Lead Industries Association, 420 Lexington Ave., New York 17, N.Y. ROBERT L. ZIEGFELD, Secretary-Treasurer.

National Council on Rehabilitation; Secretary-Treasurer: MR. HOLLAND HUDSON, 1790 Broadway, New York 19.

National Metal Congress, Philadelphia.

National Rehabilitation Association, 411-7th Ave., Nashville 4, Tenn. LOUIS R. SCHUBERT.

National Safety Council, 20 North Wacker Drive, Chicago 6, Ill. NED H. DEARBORN, President; CARMEN FISH, Secretary.

National Tuberculosis Association, 1790 Broadway, New York 19, N. Y. H. STUART WILLIS, Secretary.

Saranac Laboratory of Edward L. Trudeau Foundation, 7 Church Street, Saranac Lake, N. Y. ARTHUR J. VORWALD, M.D., Director.

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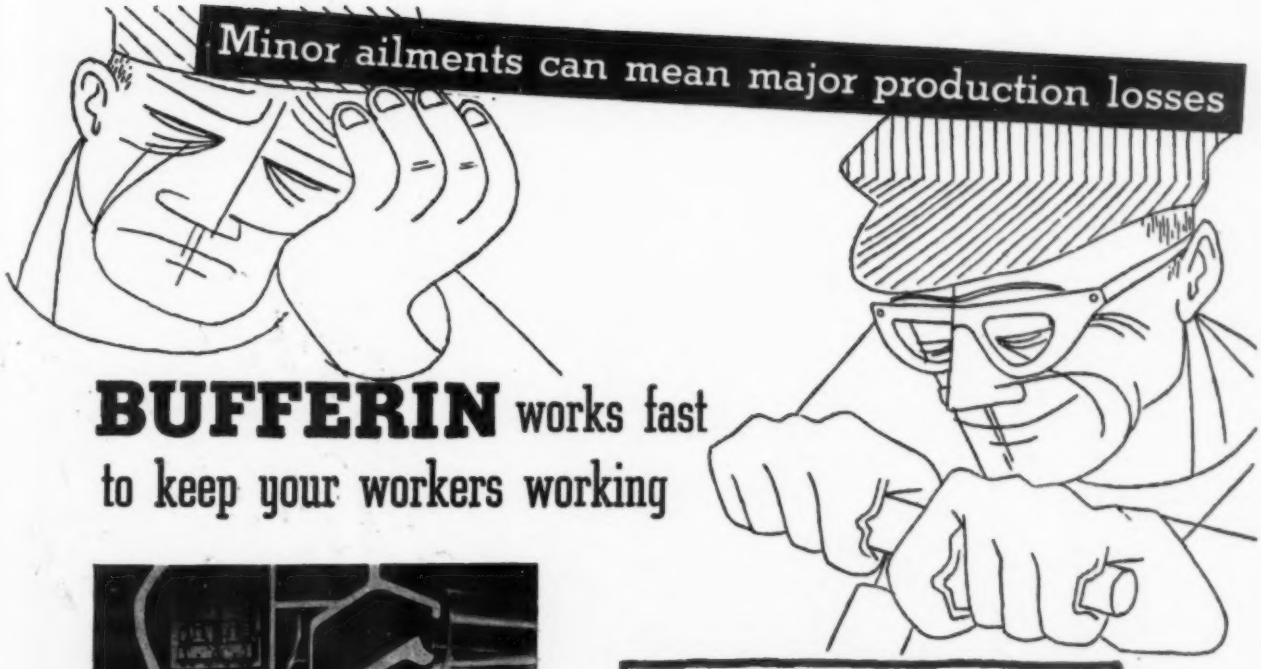

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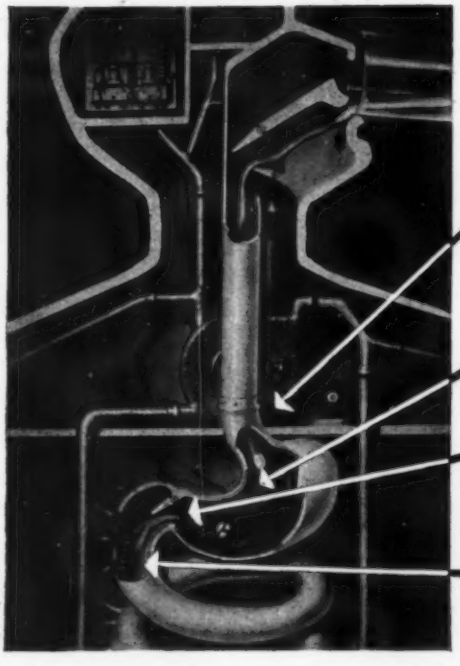

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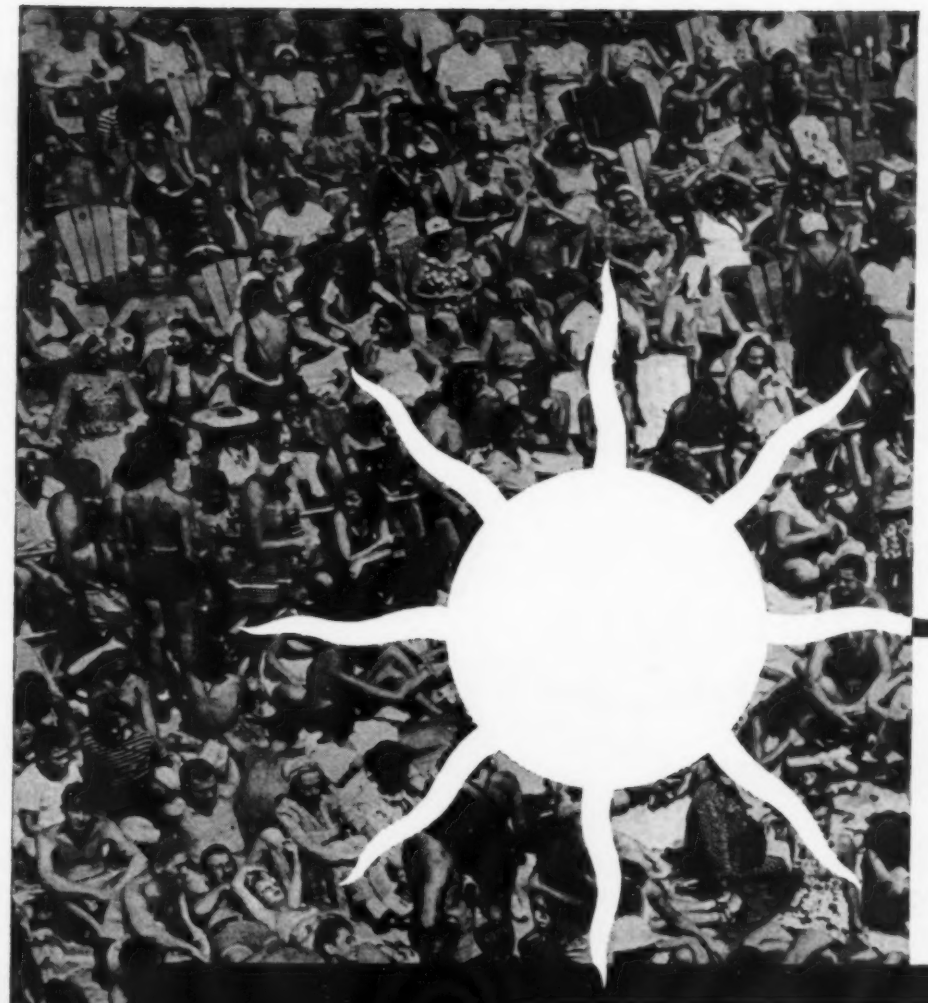

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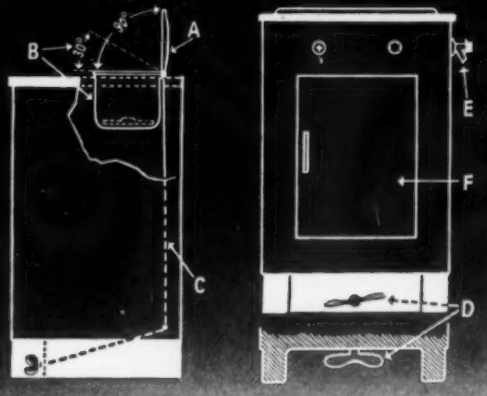

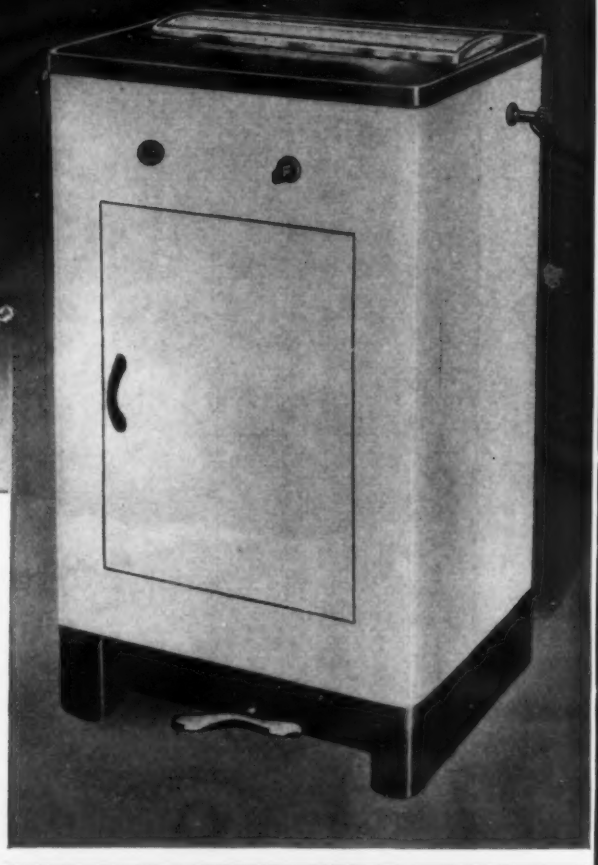

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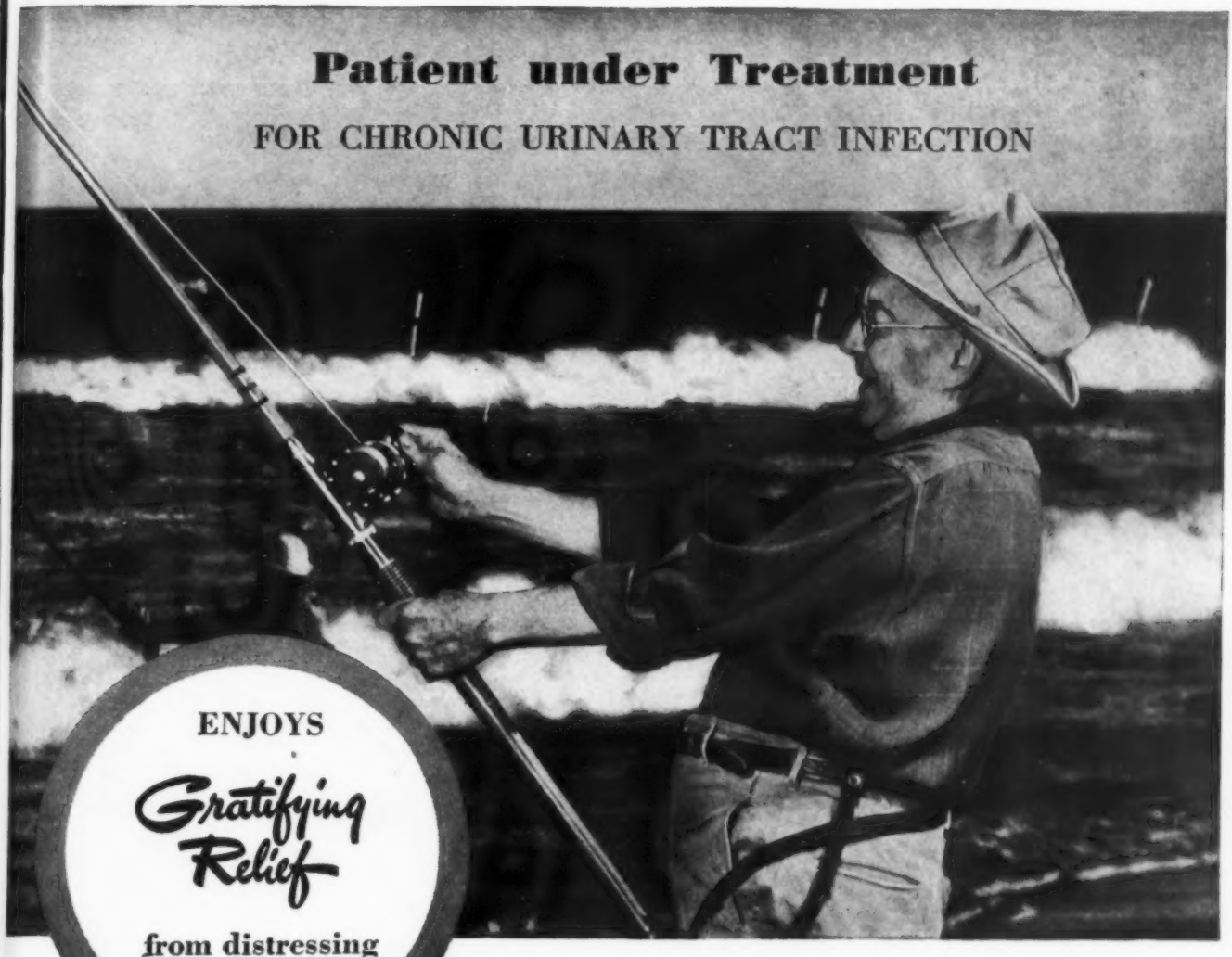

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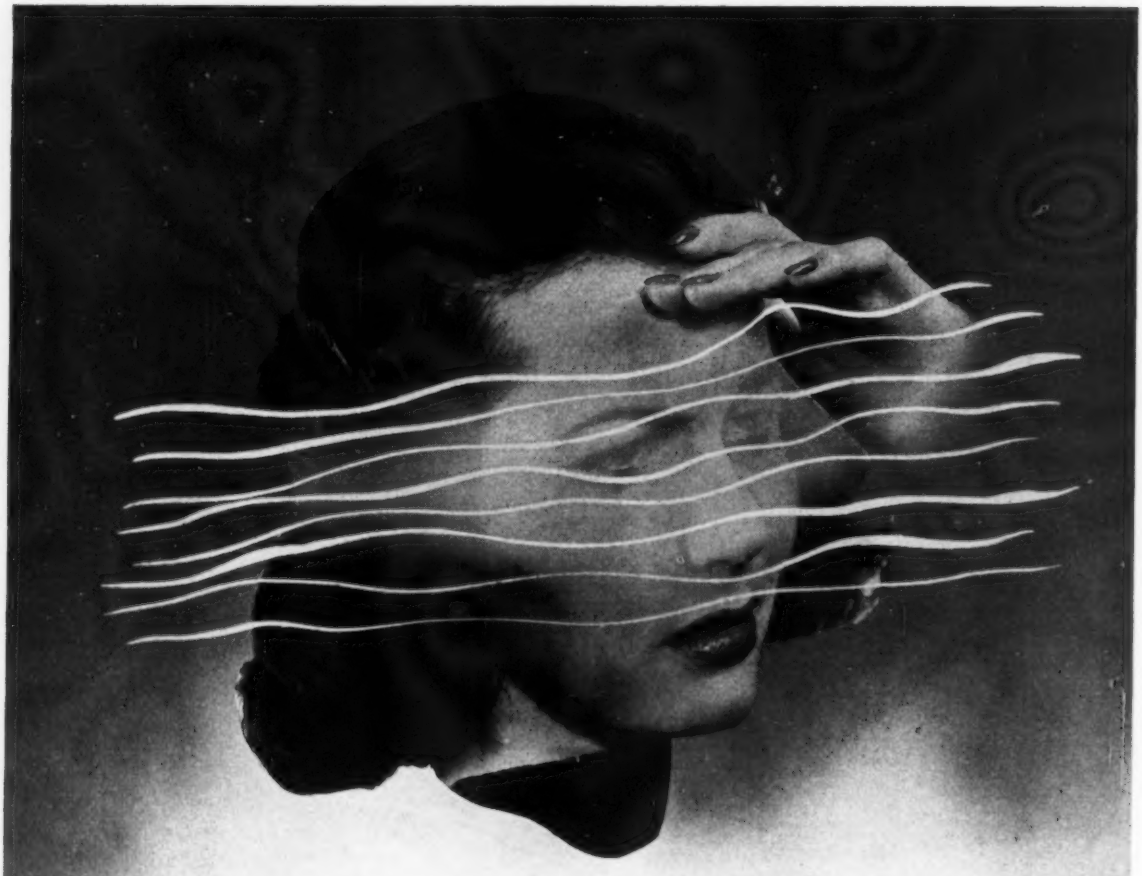

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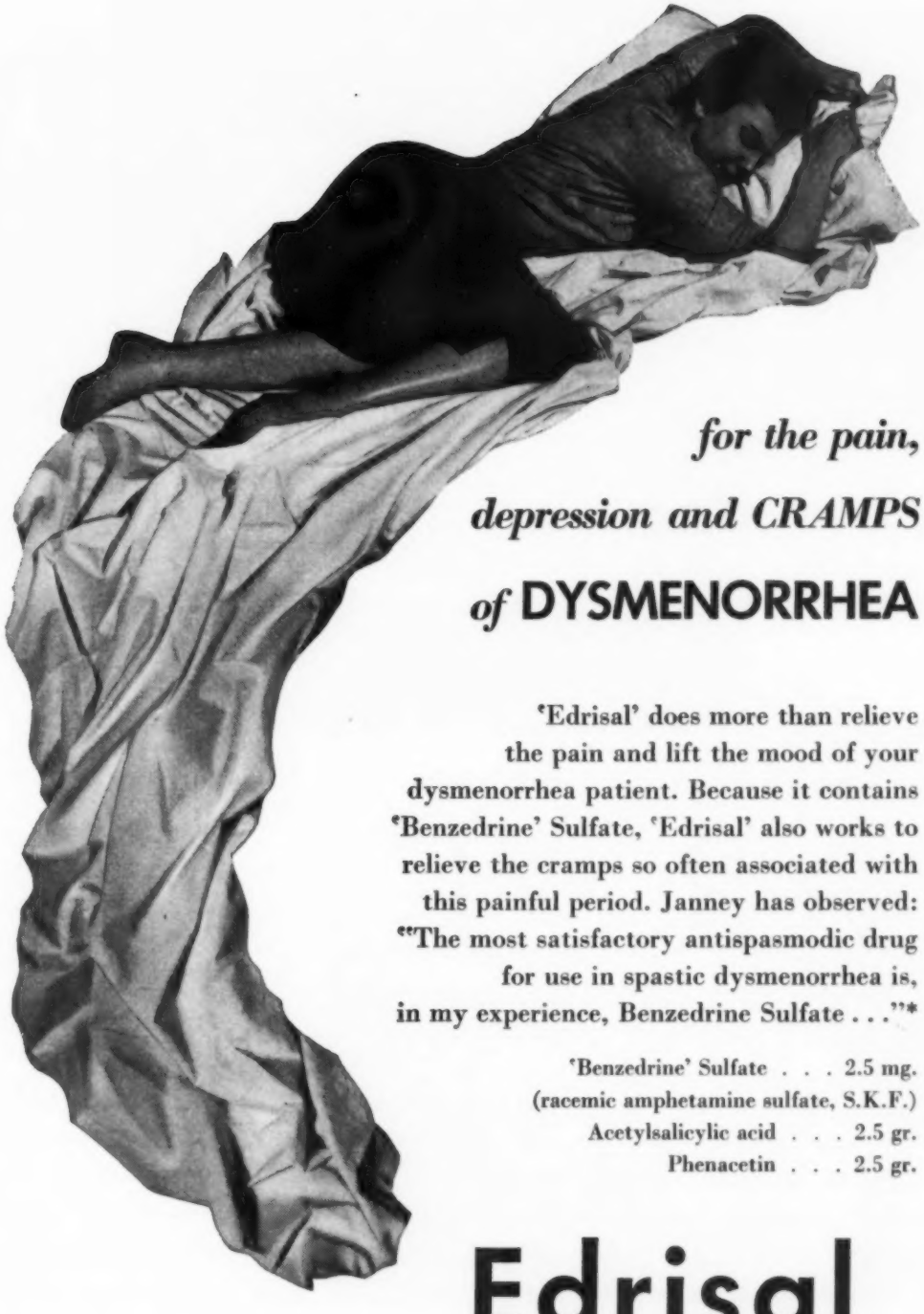

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*Janney, J.C.: Dysmenorrhea, Medical Gynecology, Philadelphia, W.B. Saunders, 1945.

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INDUSTRIAL MEDICINE AND SURGERY

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Evolution of Small Plant Health Service as a Private Practice

FORREST E. RIEKE, M.D.,
Portland, Oregon

1941-1946 "War Years"

THIS is a progress report of one man's adventure, and misadventure, in the field of industrial health. Indeed, it is a preliminary report on nine years of effort, five spent in huge nationalized war plants and four in the private practice of industrial health work. Out of a very enjoyable series of experiences certain salient facts loom like beacons. These need to be related, but before asking their acceptance it seems only fair to present the background from which they spring, perhaps as a set of personal credentials as well as a frame of reference.

In 1941 through a series of circumstances which fate often contrives beyond personal control, I was retained by Oregon's State Accident Commission to establish and operate a plant dispensary at Oregon Shipbuilding Corporation; this shipyard of 11 shipways was one of Henry Kaiser's most successful mass production units, operated as a prime contractor for the United States Maritime Commission in fabrication of merchant ships. It was imagined that a maximum of 8,000 workmen would eventually work here and perhaps build a ship on each way each 90 days. Within 15 months 35,000 persons were engaged, and within 30 months sustained production reached 22 ships from 11 ways each 30 days. By 1942 a second shipyard eventually employing 25,000 was added and we were well into the wartime job. Thus during a period of 18 months of 1941-'42, in common with most other communities, we saw the birth and full development of a totally new industry which literally engaged the entire industrial effort of a metropolitan area of 500,000 persons; six shipyards employed 120,000 steadily for four and one half years. Obviously, community resources were sorely strained but magnificent cooperative efforts followed, efforts well worth brief description.

Thousands of workers and families moved to the area. By 1944, Kaiser-operated Portland area shipyards had recruited 45,000 workers in the Middle West, East, and South and these were followed by families (most of whom have remained in the West). Temporary housing was built for 17,000 families; two temporary hospitals were added of 300 and 120 beds respectively; barracks were erected to house and feed 8,000 single men, and infirmaries were built and operated for the moderately ill who could not get into overcrowded local hospitals; two child care centers for day care of children of female workers were built and staffed, sheltering 300 children daily at each of our two huge Portland yards. In the period of 1943 to 1945 our personnel changed from nearly all men to a point where 35% of those buildings ships were women of all ages and color.

To ease strain on local medical services, in-plant work from the start consisted of the usual services of emergency care of serious injury, definitive care of minor injury and illness, expeditious referral of serious illness and injury, health surveys, and health education and all possible preventive activities. About half of this work was for so-called job-connected ailment, the rest was personal or off-job in origin. Whether job-connected or not was of small moment so long as health was maintained and workers "got on" with production in vital war effort. Confusion eventually arose, however, over the fact that employees of the State Accident Commission were actively engaged in extraneous duties at least 50% of the time. This and other problems dictated a change of plant medical administration in August of 1942. For reasons largely economic it became urgent by then that new arrivals be assisted to secure and pay for medical and hospital service through pre-payment. When asked, local and neighboring county medical societies cooperated fully; long existent county-wide pre-payment plans evolved into a state-wide corporation called Oregon Physicians Service. By 1944 this corporation was insuring 40,000 of our 60,000 workers. Local medical people played a dominant role in planning and staffing our temporary hospitals and infirmaries and cooperated fully with in-plant medical activities. From August, 1942, to September, 1943, Oregon Physicians Service was the operator of in-plant medical services at Oregon Shipbuilding Corporation and Kaiser Company, Inc., Portland Yard; I directed this joint venture by O.P.S. and the accident commission.

By September, 1943, after two years of almost uncontrolled growth a third phase of medical activity burgeoned, that in the realm of prevention or health maintenance, of pediatric services in child care centers, of occupational disease examinations, of plant sanitation, of health education, etc. It was then deemed advisable to shift administration of plant medical service

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from subcontractor to plant operator, and our medical corps again changed employers, this time to Kaiser Company itself; we then continued under this beneficent sponsorship to the end of the war in our three-fold job of treatment of accidents, expediter of community medical services, and plant health department in the field of prevention.

Certain joint health endeavors during this period merit full discussion but a brief summary must suffice.

In 1942 and to the end of the war Professor Philip Drinker and a staff of Navy and U.S. Public Health Service industrial hygienists gave great assistance in the field of toxicology and sanitation. Under pressure of war plant need, here and elsewhere, the U.S.P.H.S. and Oregon State Board of Health created a division of industrial hygiene with its own laboratory; this office gave excellent service and continues healthful growth in the field.

The National Safety Council transferred hard pressed officials from other fields to assist in health and safety activities in steel shipbuilding; their collected experience saved much needless research by untrained workers at a critical period when answers were desperately needed.

Local city and county health officers performed unusual feats in meeting the tremendous burden imposed by swollen and transient populations, especially in huge projects sheltering 15,000 families adjacent to, but outside, Portland's city limits.

Medical societies, local and state-wide, and the American Medical Association gave unstintingly of time, effort, and information. At a heavy cost both in money and effort, the medical society sponsored Oregon Physicians Service insured a huge group of qualified to poor medical risks, persons far from home and engaged in new and hazardous work, and underwrote this insurance by delivering medical service far in excess of that contracted for.

When photofluorographic equipment became available we were pleased to help with the first steps in an industrial mass x-ray survey conducted by public health departments and the Tuberculosis Association in a cooperative venture that has grown and prospered wonderfully well ever since in our community and state.

Staff and officials at the University of Oregon Medical School gave all possible assistance in their special fields, as did the specialist groups in active practice.

From the start, union-management relations were friendly even though not always harmonious. In a period of five years three local Kaiser shipyards aggregating 90,000, actually employed over 400,000 different persons. Through all this, local labor-management committees were able to compose their differences without serious threat of strike. In such a climate it was possible to explore all phases of plant health service with labor officials and plant committees and seriously to discuss provisions of continuing community wide industrial health service in the post-war period.

In 1943, partially stemming from mutual effort in steel shipbuilding, labor and management arrived at a state of amity sufficient to encourage Oregon's legislature to pass an occupational disease section of the Workmen's Compensation Laws. Immediately thereafter it was our privilege to entertain the Occupational Disease Board of Review thus established in an informal meeting at the shipyards to discuss the relation of this law's impact on war industry, as well as the changed relation of trauma to injury.

1944-1947 Transitional Period

DURING the war years a common goal and shared anxiety and hardship assured a willing spirit of cooperation in any undertaking that promised to improve, protect or repair health, both in local war plants and in our community. By the end of 1944 many of our production, housing, social and medical problems had been defined, attacked and to a degree solved. Moreover, effect of our efforts could be measured and evaluated. Services rendered in the plant were these:

1. Emergency treatment of injured.
2. Immediate medical attention for all ambulatory patients, thus assuring early diagnosis and early referral.
3. Examination for job transfer.

(Pre-placement examination specifically prohibited by West Coast union-management labor agreement of April, 1941.)

4. Periodic examination in dangerous trades.
5. Health surveys in case finding work.
6. Environmental sanitary work including industrial hygiene survey by state and federal personnel.
7. Health education and instruction in occupational hazards control.
8. Assistance in field of medical insurance.
9. Education of physicians, nurses and medical students in industrial subjects.
10. Research in industrial problems.
11. Effective cooperation with safety department in accident prevention.

We found that a central industrial medical unit staffed at all times with physicians and nurses ready with instantaneous and specialized service was the key to successful health conservation. We implemented this by peripheral dispensaries at key points in the plant, staffed by excellent industrial nurses working closely with the central unit. This pattern was indispensable and to be preserved for the working public. Moreover the field was of sufficient complexity and value to community life to warrant full-time effort in the field of industrial health, as a medical specialty. The laity were in strong agreement on both points.

Beginning in 1944, many hours, indeed many days, were spent in discussion with public of-

ficials, employers, voluntary agencies and labor groups in search for methods of continuation of these services for large and small groups of employees.

It was glaringly apparent that 120,000 employed persons would soon have to shift to other lines of work. Many might leave the community but most would probably remain. Employee grouping was entirely unpredictable but it seemed possible to enlist the aid of long established trade unions as permanent groups of a size and stability to serve as foci for continued industrial health service. There was the added knowledge that certain unions had for many years conducted eminently successful health programs in Eastern cities.[1,2,3,4]

Leaders of Portland's labor-management committee urged that an effort be made to enlist both groups in a non-profit foundation to promote continuance of these services. There was hope that united endeavor in the direction of improved health would counteract divergent forces in a trying period of post-war readjustment; it still seems like a good idea. After the war's end a corporate body was actually established to effectuate a proposal outlined in INDUSTRIAL MEDICINE, of November, 1945.[5] At the time of incorporation, labor and management had come to a parting of the ways. We were unable to secure strong employer representation and in its absence attempts to foster a jointly sponsored pogram were discontinued. At the same time local labor unions went into a period of internal turmoil from which only now they are emerging. Uncertainty as to employment, wages, size of membership and complexion of the economic system, plus flirtation with Federal subsidy of all health activities has for a considerable time dulled enthusiasm for union action in its own behalf in this particular field.

As predicted, the labor force did shift dramatically. The following charts are adapted from statistics compiled by the Oregon Employment Commission. They clearly show the fragmentation of industrial payrolls in Multnomah County as shipyards employing 90,000 persons closed out their contracts.

In the first quarter of 1947 in Multnomah County, which is in the main the city of Portland, 80% of workers were employed in units of less than 500 persons and 55% in units of smaller than 100. Of the latter group nearly 80% were in groups of 50 or less. There has been no substantial change to the present time. National statistics relative to employee grouping mirror those in Portland. Here as elsewhere, industrial health service must reckon primarily with the "small plant" problem and, as is the case nationally, lack of united effort by groups of small employers has been the rule. Consequently the health service available to large plants of 500 and more has been notably absent; moreover, safety measures are absent or ignored, and morbidity and accident incidence and severity continue unattractively high. We have felt that a pattern of service that succeeded in Portland would be directly applicable in other communities, large and small.

Portland, Oregon, typifies the American trade and small manufacturing city of medium size, in the range from 100,000 to 500,000. It serves a radius of 400 miles to the east and south and 100 miles to the north and west; these are areas devoted to lumbering and wood products, agriculture and food processing, fishing and canning, textile fabrication and, to a lesser degree, electrometallurgical extraction. Trade, public services, and transportation of raw and manufactured goods loom largest in Portland, and there is evidence that its industrial pattern will not change drastically.

It is in this community environment, with a strong mutuality of war-time experience and with a long tradition of small shops and small plants that our private practice of industrial health service was begun early in 1946. Several key objectives were set: (1) Provision of industrial health services akin to those available in the large industrial plant of 2,000 to 20,000 and freely available to the smallest employee unit; (2) A private practice that could set a pattern for any practitioner in any community; (3) Free choice of physician, in which the employee could come to us for treatment or go to another office without compulsion; (4) Experimentation in the field of insurance aspects of industrial trauma, occupational disease, and rehabilitation to the end that other physicians more readily might provide similar services; (5) Accumulation of information in the field of industrial injury and toxicology; (6) Delivery of honest and high quality service in our chosen field; (7) Promulgation of lessons learned to students, nurses and other doctors; and (8)

CHART I.

Type of Industries	No. of Employees	Source:
Agric., Forestry, Fishing	500	Unemployment and Old
Mining	350	Age Survivor's Tax—
Contract Construction	10,800	Multnomah County,
Manufacturing	44,100	First Quarter, 1947.
Public Utilities	16,975	
Wholesale Trade	16,000	*Excluding Agriculture
Retail Trade	31,450	and Government Serv-
Finance, Insur., Real Est.	8,400	ice, Multnomah County
Service Industries	19,300	in March, 1949, is site
Unclassified	900	of employment of 47%
*Total	148,775	of Oregon's force.

CHART II.

MULTNOMAH COUNTY—1947 FIRST QUARTER

Number of Employees	Number of Establishments	Employees by Size of Establishments*	Percent of Total
0—3	6,451	12,110	8 (—)%
4—7	2,134	11,200	7%
8—19	1,621	17,900	12.%
20—49	759	24,250	16.%
50—99	277	18,110	12.%
100—499	175	50,195	34.(—)%
500 or more	33	15,010	11.(—)%
148,775	11,450	148,775	100.

*Approximation only.

Provision of expanded safety service to reduce personal injury. To reach these goals methods had to be practical, acceptable, and self-supporting.

It was evident that services would have to be provided on a zone basis, in the immediate area of many small and medium-sized shops, open to all and operating on a fee for service basis. Small employers with three to 50 workers do not have a budget set up for pre-payment in provision of industrial health and safety service, and charges could only be levied after services were delivered. We found no small employer interested in health service on a pre-paid per capita basis. Furthermore, we had no way of estimating such a charge had it been requested.

Previous trials elsewhere in Portland had shown that a dispensary located within the buildings of any single larger plant in a neighborhood was not well used by workers from other shops and not well supported by other employers. The conviction grew that the "zone dispensary" should be in its own space, should open onto the sidewalk, and be separate from any single plant, equipped to handle workmen in dirty clothes, and prepared to cope with a host of different insurance arrangements as diverse as the American insurance scene itself.

Valid objection to contract practice and the "company doctor" era made it preferable that no rigid "doctor-employer" arrangement exist. Because preponderance of industrial health service in thousands of small communities must derive from the private office of practicing physicians it was desirable to demonstrate that the private practitioner can do the industrial job along with his multifarious other duties. "Free choice" and "private practice" seemed essential in our experiment.

Small Plant Service 1946-1950

A BEGINNING was made in February, 1946, with the opening of a zone dispensary in leased space in the center of an area inhabited by two paper box factories, a shirt manufacturer, a laundry, a large retail and several small stores, a metal plater employing six men, branch truck shops of General Motors, Mack International, International Harvester and several independent truck and trailer repairmen, a sheet metal fabricator, a furnace service shop, a grain mill supply house, etc. Within a distance of half a mile about 800 persons found steady employment.

For the most part nearby employers and employees quickly welcomed us as new neighbors. At first some wondered why we could not afford a better neighborhood, but word soon spread that we came by choice to be near the work place. As workers discovered that they and we had all worked together in the topsy-turvy world of the shipyard they realized that we were carrying on with accessible plant services with which they were familiar. They have endorsed our efforts by returning for care and sending their friends, the best possible evidence that our services are valued. At the urging of several plants in another section of town, a second "zone dispensary" was opened in the fall of 1947 and both have enjoyed steady growth in patronage in the intervening two and a half years.

Shortly after opening our first dispensary we undertook rehabilitation of plant service in the shops of a lift-truck manufacturer employing about 500 men and women. During the war years nurse service had been provided but no physician was in attendance. This plant is two miles distant from the dispensary, has its own full-time nurse, and first aid and examination rooms. The nurse is a graduate registered nurse holding a public health degree, and our plant service is certified by the American College of Surgeons. We spend about six hours a week at the plant in examination work, in supervision of the nurse, of sanitation and of industrial hygiene, in assistance in job placement, job transfer and rehabilitation and in unspecified personnel counseling. We participate actively in x-ray surveys, vision screening, safety committee, goggle program, etc. Our zone dispensary provides care for many of the minor ailments and injuries arising at this plant. The workman may come during working hours without financial penalty, receives immediate care and is returned quickly to work. If necessary, a physician makes an emergency "home call" to the work place but this is infrequently necessary. Here again we have no contract with the employer, either written or implied. Each month the employer is billed in proportion to work undertaken; services rendered at our dispensary are charged to accident insurance carrier, hospital association, the employer or the patient.

Hospital staff appointment was secured at a general hospital midway between our dispensaries. We divide physician's time as needed between the zone dispensaries, the hospital, visits to the lift-truck plant and miscellaneous visits to small shops or place of injury.

Before launching into specific types of work done and problems encountered a brief description of the "zone dispensary" is timely. It is on the ground floor, next to taverns and restaurant used by workmen. Equipment and furniture are plain, clean, bright and sturdy; the injured man comes to us in his greasy overalls with pockets full of spud wrench or pliers and our furnishings have to take it. There is a reception desk and record files, waiting bench, recovery cot, wash sink, treatment table, spot light, eye treatment chair and necessary medicines, dressings and splints. Physician's desk, book space and files are walled off, and in the rear is an examination room with adjacent lavatory. Simple lacerations are repaired at the dispensary and superficial corneal foreign bodies removed. Simple urinalysis is done, but hematology, x-ray and refined laboratory work are all done at the hospital. This dispensary is a

small private, plant-type, first-aid and examination facility, staffed by a full-time nurse, part-time doctor and part-time stenographer. It easily fulfills the criteria set by the American College of Surgeons for such a unit. At our second dispensary additional equipment is present to provide psychometric, safety, and visual tests deemed necessary to conduct careful examination for certification of commercial drivers, and flight personnel.

Specific Services

RESORT to a roughly chronological outline may best illustrate services rendered.

IMMUNIZATION: At time of first opening our community was in semi-quarantine because of threatened spread of hemorrhagic smallpox from the Orient, carried by returning troops. We hastily set up a vaccination service to immunize several hundred workmen at the work place and at our dispensary. Immunization efforts continue unabated.

EMPLOYMENT EXAMINATION: At first our work was primarily care of injuries. A few months later, through the suggestion of the city health officer, a large hardware wholesaler asked to have new employees examined and others certified prior to advancement to higher position. Emergency accident service for this firm's employees followed in due course. Many other firms since have been added.

CONTROL OF TOXIC MATERIALS: Shortly after the war, local scrap steel organizations began wrecking ships and acetylene burners developed trouble with lead poisoning from painted surfaces. In cooperation with the industrial hygiene division of the State Health Department we conducted examinations of burners both at the docks and at the steel mills where scrap was being converted. Lead control and similar protective work continues when needed.

DRIVER CLINIC: A few months later representatives of highway truck operators and the teamster's union asked help in establishment of a professional drivers clinic where careful examination and testing could be done on "over-the-road" drivers to protect their health and assure safe performance. About 50 truck firms have sent one or more drivers to the "clinic" and many send their entire driver force annually. This service has also been used by bus and insurance people to survey accident repeaters.[6]

COOPERATION WITH NATIONAL CONCERN: An aged physician died and the local branch of a nationally known powder and chemical firm—15 employees—asked us to do its examination and accident work. Their national Medical Director requested that all examinations and medical information be kept in our files as confidential material. They asked only for certain statistical data for a national survey to evaluate hazards of their industry. Without this provision we would have refused the work. A cardinal requirement of all medical work is confidence of the person served; his medical record is private and must not be exposed to general review; it remains in our files and is released only to the workman. Industrial work on any other basis has been rejected. Few firms have argued the point for long.

OCCUPATIONAL DISEASE CONSULTATION: Consultative examinations soon were requested in the field of occupational disease. A middle aged janitress, working at night in a business building where masonry repair was going on, developed a pulmonary difficulty which became chronic. Insurance carriers and attorneys asked whether occupational dusts were to blame. In another typical instance a metal refinisher worked all day in the absence of ventilation equipment over a vat of highly volatile acetates, acetone and other solvents. He finished off the day with one pint of beer and on the way home was arrested for drunken driving; city police found a high "blood alcohol" test. We were asked to examine the man to determine whether he was full of alcohol or full of acetone and whether his intoxication was in reality a case of occupational poisoning (it was).

TREATMENT RELATED TO SPECIFIC INJURING FORCE: We soon found enthusiastic response from injured workmen whose care was predicated upon the special types of injury arising from individual job processes. As time permitted we visited the shops and plants in the neighborhood to learn different jobs, their special chemicals, work processes, machinery, physical requirements and hazards or injury potential. At later date an injured person from these shops seeking care at our dispensary found a physician prepared to understand forces producing the accident, to evaluate degree of injury, to counteract specific poisons and to separate job-connected from off-job ailments. Because of close acquaintance with the employer we have been able to counsel on prevention of similar accidents; also an early verbal or telephonic report has permitted the employer with a limited payroll to rearrange work schedules until the injured person can return.

ACCUMULATION OF TOXICOLOGIC AND OCCUPATIONAL DISEASE FILES: Early in our career a cheese worker from a nearby dairy and poultry house came in with what he called cheese mites. Medical school library and health departments were not able to answer our query as to the nature of this ailment but help did arrive from the dairy cooperative manager and state college extension service. Similar difficulty arose over blood tests for cases of "swine erysipeloid" encountered among those pickling pigs' feet, packing salmon in a cannery and cleaning equipment in a poultry killing floor. At first, samples were mailed to Denver; at our urging our State Board of Health Laboratory now affords this service. Information on the disease was found in medical journals, but a wealth of experience was also uncovered at the Veterinary Medicine depart-

ment of the state college. Thus our files have grown thick with source material on occupational hazards, freely available to industry and to other physicians.

IMPROVEMENT OF TREATMENT OF INDUSTRIAL INJURY: Nearly 40% of industrial injuries involve the hands. We found hand injuries to be taken care of poorly in our hospital, usually done in the out-patient dressing room under poor conditions of asepsis, by a junior house officer and with inadequate equipment. This situation largely has been corrected. Hands are now considered important and their surgical repair has moved into major surgery. We have secured good hand instruments, and emergency care conforms to that outlined by Bunnell, Handfield Jones, Cutler and the American Society for Surgery of the Hand.

REHABILITATION: A young sawyer tore out considerable tissue in the crease of one elbow. After reasonable convalescence the boy was loath to use the arm and afraid to return to his previous hazardous work. We accompanied him to the plant, discussed and demonstrated his problem with his foreman and personnel manager and arranged for lighter but gradually more arduous work. Under this regimen of occupation therapy he quickly improved in strength, range of motion, and morale. The private insurance carrier considered this sound rehabilitation and paid for the plant visit, in addition to the fee for surgical care. The plant visit hastened return to work and lessened permanent disability, saved money, and produced a happier boy.

In a similar instance at another shop two necessary plant visits were made to assist and encourage a plate shop worker who had lost two fingers in a steel shear. A nominal bill for this service was rejected flatly by the State Accident Commission, even after exchange of lengthy explanatory letters.

We are continuing rehabilitative efforts although still without accord from the accident commission. We do not hesitate to approach the employer about rehabilitative problems; actually contact is made on the day of injury and at intervals thereafter, usually by phone. The employer is asked to assist by assuring the man that, if humanly possible, re-employment and job assistance may be expected.

JOB TRANSFER AND RETURN TO WORK: A local utility does not yet have placement examination as a part of the hiring process. An engineer doing good work as a draftsman and construction supervisor was being considered for transfer to an inspection job involving much walking and climbing in downtown buildings. It was known that he had a medical discharge from the Army because of rheumatic heart disease. Upon request we examined him and immediately established presence of inactive rheumatic heart disease with damage to heart valves; he was found ideally situated and the proposed transfer was not made.

In 1947, a 20-year employee at the lift truck plant suffered a severe heart attack and after convalescence returned to work with reduced capacity for labor and with a tendency toward attacks of pain and light-headedness at irregular intervals. Sub-assembly work was rearranged so that he works usefully sitting at a bench, making brake assemblies and instructing young assemblymen. His foreman expects him to lie down if not feeling well, to check out after four hours if necessary, to stay home on bad days, etc. Three years later his heart is still impaired but he works happily, sees us on occasional shop rounds and at the company picnic, and is a contented workman. Medical care of the heart condition is furnished by his family physician.

CASE FINDINGS: A 60 year old truck driver, in a routine driver's examination, displayed a positive blood test for syphilis and "eye signs" indicating damage to the central nervous system. He had been treated as late as 1941 but in the war years failed to seek continuing medical surveillance and therapy. We refused to clear him for driving until assured by a private physician that he had reported for care. He is checked by us at regular intervals to be sure that care is continuing; after two years no further damage has appeared and he is driving safely on the heaviest traveled highway on the West Coast.

Another 58 year old driver was found to have a lung tumor in his routine survey chest x-ray, unfortunately too far advanced to permit of life-saving surgical removal. Another more fortunate driver showed an isolated tuberculoma in his x-ray; it was removed by a chest surgeon with complete recovery.

PSYCHOTHERAPY AND COUNSELING OF SUPERVISION: A long-time pattern maker, age 39, was going "stale" on the job and about to quit. Instead of making progress he was slipping badly. We asked the personnel manager to assist by increasing extra-curricular duties, managing a company team, etc. He has been assisted materially by attention from the foreman and fellow workers.

A supervisor felt that a 24 year old machinist was becoming sullen, non-communicative and changed in personality. When directed to us the boy had a beginning manic-depressive psychosis. Immediate treatment at the State Hospital for mental disease has helped tremendously, and he is currently back at his old job on the turret lathe. Interestingly, after one recommittment the personnel manager reinstated this boy without any intercession on our part.

PLANT SANITATION: A young male with one red eye and a red irritated skin was found to have an eye foreign body; he worked in a fertilizer blending and sacking shop employing two to 20 persons. Although phosphates, nitrogen products, various salts, metal slag, alkalis and acids are used, there was no provision for eye protection, washing of the eyes, shower bathing,

or laundry of work clothes. A trip to the plant permitted instruction on toxicity of materials and encouraged improved hygienic arrangements. This service was "on the house," as are most such visits to small shops. Small operators have become accustomed to consultation with labor attorneys and auditors, but do not yet appreciate that occasional physician consultation is necessary in the field of employee morale and labor relations.

INDUSTRIAL HYGIENE: No effort has been made to duplicate laboratory and environmental survey services available through the Oregon State Board of Health. Personnel are well trained, readily available and highly cooperative. Relations have been most amicable and except for possible long range financial considerations which might hazard any state agency no need is seen for early effort to provide private hygienic laboratory service.

SAFETY WORK: It is a lamentable and easily substantiable fact that 70% of industry has only the most elementary of safety programs. This is largely "safety" built into mass produced machine tools by large national manufacturers. In the small shops accidental injury is far more frequent than in the large plants where safety engineers, personnel managers, safety committees and plant physicians labor to prevent death and destruction. Furthermore, the same accident recurs again and again in the small shop, not infrequently to the same man. In the small shop every man is a jack-of-all trades, equipment is sketchy and often home made, and management is one man with a cloudy crystal ball; these are the culture media where accidents thrive best.

Our dispensary records clearly show that accident repeaters do exist individually, but even more striking is the wide range among different shops in the same field. The amount of accidental injury from shop to shop is often widely disproportionate to numbers employed, but quite consistently high or low for the same shop.

In fairness to small operators, small plant safety service does not exist just as small plant health service did not; we hope to get to that problem soon. Repeated efforts have been made in this direction; all thus far unsuccessful.

Unsolved Problems

I HAVE outlined the road traveled thus far. We find an established private practice in the field of industrial trauma and occupational disease as well as consulting work in job problems of many kinds. Services are delivered at two field dispensaries, at a dispensary at a lift truck plant and in a local general hospital. We have a friendly relation with many firms and growing interest among others not served. We are well started but many unsolved or partially solved problems confront us, some peculiar to our situation but most attaching to service in industry anywhere.

SPACE AND EQUIPMENT: We operate in leased space in converted commercial buildings in the shop areas. Building service is difficult to maintain for such small units; rent, heat and light are costly, and space is poorly designed for medical purposes. Asepsis is maintained with difficulty and in only fair degree of effectiveness. These are features peculiar to the rundown business property available at present, in proximity to warehouse and factory locations. Temporarily at least expansion is impossible because of absence of space. In areas on the up-grade, prices are exorbitant, and in degenerating territory expenditure for buildings is economically unsound.

It is now clear that we need a more complete examination facility and minor surgery at a central unit where x-ray equipment, laboratory services, special examination equipment and surgical aseptic methods can be housed successfully. This poses the problem of actual provision of facilities, sponsorship, financing and long term investment.

SPONSORSHIP AND FINANCING: The casual discussant informs me that employers, unions, and insurance carriers must all be interested vitally in successful small plant service, and certainly must offer a ready source of assistance in the provisions of better facilities to house better services. There is an understandable hesitancy among these agencies to back an unknown quality such as a young physician in the poorly charted field under current study. I can condone such hesitancy, but mass inertia of the above-named groups in organizing and aiding the movement exhausts both energy and originality. This apparent lack of interest is no particular brake to my enthusiasm, but much greater effort and interest are required if other individual physicians or groups are to be stimulated to provide similar services for other plant areas.

Financing has been entirely my own. After failure of the group approach for labor-management sponsorship, I have not sought financial or personnel aid but, interestingly, neither has it been offered. Purely parenthetically, government has talked of aiding small business but if they help me any further, with required reports, deductions, unemployment and welfare contributions, special taxes on professions, *et al.*, I shall be well-nigh forced out of business by their inquiring solicitude.

The Accident Commission (an administrative insurance division of state government) has recently advised that thus far they have had no objection to experimentation on their cases but that now I am established and they expect me to improve my surgical facilities and stop taking so many hand injuries to the hospital. To drive the point home recently they have deducted hospital surgical charges from several of my fees in cases which they have decided did not really need to be done at the hospital. With a program entirely self-financed an approach such as this discourages extension of preventive services in a most pragmatic way.

In 1944, 1945, 1946 and even today I am told that our endeavor is certainly worthwhile but that it needs to be sold. The American Medical Association has lowered the ethical bars a notch to encourage what is described as positive education of the laity in the benefits and methods of industrial health service.[7] The product is salable and efforts at salesmanship are well received, but the practitioner has not the necessary time to organize, expand, treat, and then sell.

It is understatement to say that absence of support by involved groups is disappointing; it makes doubtful any but halting extension of small plant service. We feel assured on the basis of results thus far that, with even moderate cooperation by local employers and workmen, splendid small plant service is attainable on a self-supporting basis.

Actual operating revenue thus far has come almost entirely from employer or insurance (pre-paid) sources. Oregon's Compensation Laws define hazardous industry and require those firms so engaged to insure for accident costs and time loss and disability compensation with the Commission. The employer may, however, elect to reject the Workman's Compensation Law and fall back under the Employer's Liability Law. In either event, medical services for injury are customarily paid for by others than the injured person, i.e., accident commission, liability insurance company, or self insured employer.

As intimated, a large proportion of employed persons also voluntarily carry partial or full-coverage medical and/or hospital insurance, in groups or individually. A steadily increasing number also insure under indemnity type coverage for medical and sickness-loss expense.

Industrial health services are, of course, billed to the employer.

COMMON to all of these is the factor of third-party financial responsibility. Where clear cut accident or occupational disease is present, billing and payment is relatively uninvolved. Very often, however, uncertainty exists as to job-connection; the workman says the ailment arose from employment, his employer says no, the insurance company is disinterested and the medical service is a villain no matter which way the decision falls.[8] Thus, the collection problem is not solved automatically by pre-payment, for refusal of payment by the insurance carrier is countered by refusal by the patient. *Problems attaching to the provision of health services, both preventive and therapeutic, in a predominantly prepaid pattern, have not been aired sufficiently.* Although the scope of our work is narrow, its very limits have enabled critical analysis of the influence of third-party financial responsibility upon expansion of service, encouragement of preventive medicine, overhead expense, solicitude for the patient, obstructions placed before the doctor, etc. Prominent in the current American medical scene is the almost frantic rush by all concerned to get every one enrolled in the toils of pre-payment medical service. One cannot be absolutely certain that pre-payment or insurance medicine will completely obliterate privately paid fee for service arrangements. On the assumption that our practice is a prototype of this growing economic pattern it seems urgent that I develop a discussion of the difficulties and shortcomings flowing out of "pre-payment."

PRE-PAYMENT MEDICAL SERVICE OFTEN FAILS: Until 1945 I spoke out strongly for the widest possible extension of pre-payment for medical expense. If I were still a full-time, major-industry Medical Director I probably would still so speak. I saw many difficult problems made easy by the provision of funds prior to need. On the basis of sheer logic alone, removal of the economic burden promised early care of the ailing because expense ceased to be a bar to the seeking of care, and we believed that prevention of disease would thrive by judicious budgeting of a part of the insurance fund. Five years later I suspect my logic. In retrospect I suppose it should have been foreseeable that under pre-payment, need would soon be encouraged to catch-up with and constantly pass provision for need. In the following observations it must be clearly understood that I speak of both governmental and private pre-payment; where differences exist they will be noted suitably.

COMPENSATION AND NEUROSIS: As in other states, Oregon's pre-paid accident insurance laws are about 40 years old. As intended, they have provided a measure of relief to the public by shifting financial burden of the injured person from tax rolls to the employer (and indirectly the consumer). This financial burden has encouraged the employer to improve working conditions and thus cut accidents. The preventive force of this burden has, however, been static in small industry almost from the start. Accident cost is spread over the entire industry; pre-payment by the small employer is not now a potent preventive factor. On the destructive side of the picture, existence of a large compensation fund in the hands of public officials has encouraged exaggeration of disability and a false attitude toward self-rehabilitation that has seriously hurt many cases of recuperating injury. In most instances the injured person with residual disability recovers largely by his own up-hill battle of muscle rebuilding against the discomfort of fatigue and pain. The "eased financial way" with progressively increasing award for demonstrated disability slams the door on victory by personal effort. Character, integrity and self sufficiency often have been lost through the good offices of a solicitous agency. For this reason among others we attempt to maintain very close touch with our injury cases, returning them to regular work at the earliest possible moment compatible with safety, to avoid the devastating personal effect of so-called "compensation neurosis."

Pre-payment in the off-job medical insurance field similarly has dulled morality and initiative, and one need not look at England to prove it. Oregon Physicians' Service has had to abandon full service and require payment of the first call to block unconscionable raids on the funds. Doctors and patients alike have disregarded the fact that group insurance does not envision everyone's getting his full financial investment back each year. Individuals refuse to face this fact, and this generates real trouble for the honest physician who insists upon the cause of economy in the presence of a pre-paid enthusiast bent on getting his money's worth.

PAPER-WORK FATIGUE OR AUDITOR'S DISEASE: An honest appraisal of the pre-payment pattern quickly demonstrates the harmful effect of loss of personal financial responsibility of physician and patient. The immediate tendency is toward careless expenditure for laboratory services, drugs, too frequent visitation, etc. This has generated a chain of consequences that requires exposition.

One must agree that the insurance "authority" (to use a phrase of the International Association of Industrial Accidents Boards and Commissions, hereinafter called I.A.I.A.B.&C.) or other insurance plan cannot pay for services until the validity of the claim is established and the authority learns what has been done. In every instance then it must have a full and detailed report of the accident, the injury, how it happened, where, when and why, was it job-connected, is it the employer's responsibility and that of the insurance body, was medical care immediate and if not why not, what was found, what was done, what will be done next, are complications expected, is time loss involved, how much is to be spent, and for what are you asking approval? After the immediate emergency is over one is asked for progress reports at the whim of the insuring body, as to how the man is now, what is to be done next, whether care will continue one, three, or five weeks, why is such a long time necessary, etc.

Soon the "insurance authority" becomes quite expert in how to get things for less. Through its statistics it learns that some physicians and some hospitals cost less, ask and complain less, and insist upon less for the patient.

Gradually the "authority" ventures into uniform rules and regulations in the interest of "cost control" and, purportedly, high standards of performance. These two contradictory terms have not been teamed readily by insurance authorities of my acquaintance, but not for lack of trying.

Fourth in the noxious tetrology, beside physician irresponsibility, complete report and uniform rules and regulations, is a more dangerous practice *"prior approval for all but emergency procedure."* Physicians rightly feel that this point exceeds the bounds of reasonable solicitude. It is at the point of "prior approval" that personally adjusted, individualized treatment of the patient is very often strangled in delay and red tape.

To avoid further length I can summarize the physician's position in a sample pre-payment pattern with which I am best acquainted; in Oregon's Industrial compensation picture the physician must:

1. Agree to supply all reports sought by the Commission.
2. Advise the Commission of any doubt of validity of the claim.
3. Secure prior authorization from the Commission for all surgical care other than immediate emergency care.
4. Secure prior approval before consultation.
5. Face the possibility that after long care is given, both in and out of the hospital, the Commission may refuse all responsibility.
6. Agree to accept payment at the Commission's fee schedule or any reduction of fee it deems proper.
7. If too critical of Commission procedure, face the possibility of being declared ineligible by the Commission to treat those insured.

The above mentioned I.A.I.A.B.&C. has recently unanimously approved a committee report on medical care in which point (3) states:

"3. As regards choice of medical attendant, the committee feels that *free* initial choice of physician should be permitted *in conference with a skilled unbiased medical officer of the Workmen's Compensation Commission* who should, by consultation and reference, see that the best medical and surgical care is rendered. In order properly to accomplish this, the *law should place control of medical aid in the compensation authority* and free initial choice allowed by ruling of the Commission."

The right hand giveth and the left taketh away. The "authoritarian" is constantly tempted both to stretch the medical practice act and to assume that the insurance company knows best what is good care for the patient. How initial choice can be free or how practice can be free when controlled by the authority is beyond me. Point (3) is the stumbling block of nearly every pre-payment plan advanced for legislative enactment. Specific wording to this effect is usually absent, but prior approval is congenital in insurance bookkeeping.

After requiring repetitious reports, burdensome letters, and special billings, insurance carriers insist on a fee of their own setting, upon the privilege of cutting this fee and, finally, of rejecting the entire case at any stage. Inevitably, physicians lose interest and turn to work of equal service to mankind, but with more pleasant and stimulating clients than the "insurance authority."

Paper work is exhausting and detailed, it takes much time and effort, and for the most part adds nothing to the care of the patient. In my experience, up to three hours daily must be spent

in communication of information to third parties. This adds measurably to cost of our services and must inevitably be paid for in other fees, for no fee is paid by the insurance authority for this service. This time would be spent more constructively in study and patient service. It is a costly and awkward business and is a basic reason why America's physicians believe "insurance" medicine will be more expensive, less flexible, and less well adapted to patient needs than that provided under the fee for service pattern as we have known it.

I hope it is plain that these things are mentioned because of their adverse influence upon quality of medical care in the industrial field.

RESPONSIBILITY, CONFIDENTIAL COMMUNICATION, AND MALPRACTICE: Primary in medical care is the tenet that the patient shall have faith in his physician, shall feel that the physician has only one interest, the patient's welfare, and that he can divulge his innermost secrets of mind, soul, and family in complete confidence. This is the basis of the Hippocratic Oath and of the medical code of ethics. The "third party" or "insurance" pattern intrudes upon this basic concept at almost every turn. Nothing is completely confidential; the insurance authority wants the facts or it will not pay. If the physician divulges the facts, he loses the patient's trust and is no longer able to sustain the faith so necessary to healing. In the eyes of the patient the physician becomes the servant of the insurance company, and all too often he and the patient are either co-conspirators or at financial loggerheads.

Less obvious is the conflict regarding responsibility and malpractice. I am a licensed physician in the state of Oregon. As such I am legally responsible for every action; if I do less than my best for the patient I am breaking the law under which I practice. The insurance carrier operates under a different law, one of economics. In the interest of economy I am told not infrequently that the "insurance carrier" will not pay for certain procedures I deem necessary for the patient. I needed an assistant for certain detailed work but they refuse to pay the assistant, stating that he was not necessary. I charge for visits to the work place to assist in rehabilitation of the workman and they refuse to pay for such service. I order certain drugs at the hospital but they refuse to approve their use.

There seems to be a fundamental disagreement about the relation of insurance to the practice of medicine in the service of man. I can only repeat, the insurance carrier is constantly impelling me toward malpractice by omission and in so doing creates an unpleasant environment for service and tends to lower quality of care.

There is nothing in the advancing march of pre-payment that leads me to believe the problem will grow less. Some private insurance companies are less troublesome than some state "authorities," but the reverse is often the case. It is not fair to say that physicians are constantly in turmoil with insurance carriers; the potentialities, however, constantly are present and confusion is always part of the scene.

PRE-PAYMENT AND PREVENTION: Pre-payment is an expensive business where third party overhead costs must be borne by the insured, over and above other normal medical costs. Although prevention is among the avowed claims of those promoting pre-payment, both funds and efforts are dissipated on waste and over-use of service to the point that little is left for preventive effort. This is particularly true in small plants where the overhead factor becomes difficult to control. I do not look for assistance in extension of preventive methods in our field from those purporting to insure for the two-fold purposes of treatment of the ailing and maintenance of health. The latter endeavor will be paid for separately, or it will not be financed.

PURE PREVENTION, THERAPY AND THE PHYSICIAN'S SOUL: Originally our small plant service was to be limited to preventive activities. This limited goal has been abandoned (or expanded) for several reasons.

Employers were not ready to pay the bill for purely preventive activities. This unwillingness is a major deterrent to expanded preventive services in most communities and in many larger plants as well as small. Costs are not prohibitive,[9] but employers are not yet educated to, or convinced of, values to be received. In face of the breadth of educative efforts in the direction of human conservation this reluctance is fading rapidly. Demand for services is about to pass supply.

Secondly, there was a need for improved care of industrial injuries, care based upon intimate knowledge of the forces producing the injury, and I found great satisfaction in providing such care. I also found that purely administrative work dulls diagnostic acumen and clinical judgment, and the ability to detect incipient illness was slipping away. Furthermore, as one who counsels in on-job rehabilitation of injured or ill, I found it necessary to continue some diagnostic and treatment work in order to stay in touch with both medical methodology and criteria as well as the demands of occupation.

Patients need the physician; physicians also need the patient. If physician separation from patient work is too prolonged, the physician loses clear perception of the problem of the ailing person, of those providing immediate care, and of the psychological problems confronting the convalescent. In addition, there is a loss to the physician's soul of the very important leavening ingredients, thankfulness and patient appreciation, which do so much to sustain the morale of medical people. In shipyard days I found that full-time work in prevention and administrative duties left me with an unsatisfied feeling; this

has disappeared with return to a balance of preventive and therapeutic activities.

I am acquainted with the attempt to separate plant preventive activities from those of therapeutics. It is an unwise separation and the current trend should go the other way toward a logical balance. Some hospital work is stimulating to every physician.

LACK OF PERSONNEL: Although the American Medical Association, the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS and other interested groups are unremitting in efforts to expand industrial medical education, results are disappointing if not almost negligible thus far. Of a possible 75 grade A medical schools, not more than a dozen make more than a pretense of introducing students to industry. If my thesis is correct that every physician must be a part-time industrial consultant, then every young physician must be made aware of industry, its workers, its methods and its problems. Medicine in general falls regrettably short of comprehending industrial needs. Thus far the greater number of physicians is not interested in labor and industry and it is difficult to secure top flight physicians who will turn to the field as a life work. This has been less troublesome for large corporations but is a distinct limiting factor in provision of small plant service.

OCCUPATIONAL INCAPACITY AND REHABILITATION: Hanman[10] has written a masterful if somewhat overwhelming piece on this subject which merits serious study by all of industry. He strips bare a number of fallacies found in disability rating, arbitrary awards and the abruptly "closed case." Indeed, the whole methodoxy and philosophy of compensation is challenged. It is most difficult to comment upon his work, valuable as it is, but this may be added.

Small plant service will add greatly to effective rehabilitation. We have gone through the entire process with those lightly injured and those seriously so and arrive at the conclusion that no one can substitute for the attending physician; working with community resources and employer representatives and knowing the mind and physical make-up of his patient, he is the rehabilitation officer and the only one who can successfully guide the convalescent to fullest usefulness. It is the extreme example that must be relegated to the rehabilitation center. As Watson-Jones so ably relates, the attending surgeon who gets a good x-ray result but fails to secure fullest functional recovery is guilty of criminal negligence; by the same token the physician who engages to care for the injured is obligated to follow through as the agent or guide until all possible recovery is achieved.

CRITERIA FOR HEALTH AND EMPLOYMENT: One of the problems as yet unsolved is preparation of criteria of health, of the necessary equipment which a person brings to his job. In this vein we are troubled with lack of suitable philosophy of examination for placement. A placement examination is important for much depends upon it. It is a make or break affair, both as to immediate employment and long range prognosis on the job, five, 10 and 20 years hence. Therefore, I do not agree with those who favor a short, screening examination. I prefer the screening to be done by (1) the personnel department, and (2) a searching medical and psychological recorded history. After this filter is passed the physician must have time to assess the employee and carefully document his findings in true, thorough and complete clinical detail. The placement examination serves as a base line for all future comparison and observations. It needs to be done far better than is now industry's custom. At the same time, we need criteria, methods, and forms which will record and supply necessary data to permit valid placement counseling by physicians.

It seems reasonable to believe that with the necessary tools and experience small plant health service can be expanded to *personnel and health service* without severe strain on our present mode of operation.

MISSING—SMALL PLANT SAFETY SERVICE: It is hoped that we can soon expand efforts in the field of safety service, especially in the matter of inspection, safety engineering and personal protection. In the latter field a beginning is badly needed in provision of full vision and eye protection service. Soon we hope to evolve a program using the best professional workers in combination with dispensing and servicing to improve industrial sight and maintain protective equipment at optimum condition.

In supply and maintenance of safety equipment fee-for-service patterns can apply; in safety supervision pre-payment would appear feasible, although here again fee-for-service is possible.

Comment

APROPOS of the shortcomings of pre-payment, there are many encouraging efforts under way to short-circuit the regimentation imposed by "record-avid" auditors. Where insurance administrators have managed a genuine spirit of cooperation and trust, far less trouble is encountered between practitioners and the "third party." Thus far, as large an operation as the Mine Worker's medical service seems to have found the key to such cooperation on a national scale. Probably most trouble stems from local or state levels where rule makers feel close enough to attempt recurring intercession between patient and physician.

Once an authority starts down the road of detailed "rules of procedure," resentment, distrust, and intentional obfuscation are the natural outcome. Interest is lost by the physician, individual responsibility suffers, and quality of work falls perceptibly. If the insurance authority insists upon removing responsibility from the treating physician, he in turn has no alternative

but to abandon individual responsibility for the patient; he cannot be asked to accept blame for faulty outcome when the authority has the controlling voice in decisions regarding care. Clarification is needed to define the role of the insurance carrier. The carrier pays the bills and should make a conscientious effort to promote prevention and better care through educative efforts. In payment of bills the carrier need not try to tell the physician how to do his job, either by insistence on prior approval or by financial withholdings. It has been shown repeatedly by many insurance firms that these steps are unnecessary and it is to be hoped that others will accept the principle.

Summary

I HAVE traced the background of war experience which led to evolution of a successful private practice in the field of industrial health service for many small plants in a typical American city. Specific types of work have been recorded, as have equipment, management and labor relationship, and financing. A number of problems have been listed and discussed centering around deleterious effects upon quality which often arise in medical practice under pre-payment and the insurance authority. Unmet needs are found in lack of trained personnel, lack of criteria of health, lack of suitable forms and questionnaires for placement evaluation, and lack of small plant safety service in the field of engineering and personal protective equipment.

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"Total Security" Philosophy

THE ENEMY I see in the field of social security is a disease as malignant as cancer. In two words, it is the present-day philosophy of "total security." It is the demand for comprehensive benefits to cover all human needs without regard for cost and in the absence of corresponding productive effort. It is incontrovertible that "total security" is paramount in the minds of labor. Recent demands for wage increases are all secondary to or intended for the establishment of that condition. Labor's hue and cry of "total security" is only typical. It poses a tremendous problem, and the means employed in its solution will continue to have a profound and far-reaching effect upon the entire sociological, economic and political future of the nation. Sound thinking men are convinced that "total security" is a practical impossibility and destructive of a free economy. It is Utopian and unrealistic and, if attempted through Federal security, will evolve into socialism. Need I emphasize that socialism means dictatorship, authoritarian state and forced labor. Whatever securities can be achieved can only come from honest and productive labor. As James F. Byrnes put it in his address on June 18: "that phrase (Federal aid) is an opiate. It is deceptive. It leads people to believe Federal aid funds come from a Christmas tree. The truth is there are no Federal aid funds, except those taken from your pockets. If the people generally will ever come to understand this, there would be less demand for Federal aid."

—From "Current Trends Relating to Health and Sickness Disability Benefits," by JOHN J. WITTMER, M.D., Vice-President, Consolidated Edison Company of New York, at the Legal Conference, Industrial Hygiene Foundation, Pittsburgh, November 16, 1949.

Solving the Solvent Problem

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THE inadequacies in the control of occupational exposure to solvents and other organic chemicals of similar character, and the illnesses and fatalities and the claims for compensation for occupational illness and death that arise from the failures in such control, are unsolved problems which stem in no small part from the incoordination of thought, effort and responsibility on the part of professional personnel in the field of industrial health. Numbers of such chemicals are listed in state codes of industrial hygiene in terms of maximum allowable concentrations. Many of these standards are backed by little evidence, and yet the tendency to regard them as valid and absolute criteria in relation to industrial safety or hazard is strong and increasing, especially on the part of enthusiastic industrial hygienists in governmental and industrial circles. The effect of this tendency has been good, generally, despite the shortcomings in the standards themselves. In fact, the development, promulgation and application of such standards is a highly significant contribution to the professional technique of industrial hygiene. On the other hand, such standards are not complied with in the large proportion of industrial establishments in this country, not so much because they are doubted, as because the mechanisms do not exist commonly, in industry or in state health agencies, for their practical application and their adequate enforcement. Moreover, neither the industrial hygiene engineer, on the one hand, nor the industrial physician, on the other, seems generally to understand what is required to invalidate or substantiate them, or to put them, after substantiation, into practical and effective use. Thus far we have failed to achieve practical mastery of the ideas and tools of industrial hygiene in relation to this common problem. It must be acknowledged, for the sake of a just record, that neither physicians nor industrial hygienists can be blamed for the inept and careless handling of solvents and other dangerous chemicals in small industrial plants and shops and in our homes. Something, however, is sadly lacking in the information disseminated by various means to the small commercial users and the individual consumers of these chemicals.

On the background of the foregoing remarks, let us look at this situation and the means of its solution, as one part of the general problem of industrial health, and also as an illustration, to some considerable degree, of the unsatisfactory qualities of present-day professional performance, and even of some of the unhappy attributes of modern life. Various criteria have been offered, from time to time, for appraising a current level of human civilization. Perhaps, from our somewhat specialized viewpoint, we might hold that man comes to be civilized to the extent that he intensifies his regard for human life. If this criterion be acceptable, then this period of ours may not rate high in either its attitude or its achievement, since modern industrial production, which is the most striking contribution of our time to human experience, continues to multiply its hazards at a more rapid rate than we find means for their elimination or control.

If now, we bring back our original topic into this atmosphere, we shall have to admit, I think, that we and our contemporaries have done a poor job both in obtaining the information that is required for the safe use of many solvents, and in applying that which is available. Moreover, instead of facing this obvious fact and applying the self-criticism that is urgently needed, we tend to develop a smugness and complacency, not to say, a professional pride, in the progress which we hope, at some later time, to make.

A brief description of the steps by which a new solvent or similar chemical can be introduced into safe industrial production and use, can best serve to point up the defects in the preventive measures now applied in the case of both new and well known products of this type.

Preliminary Toxicologic Investigation

AS AN INTEGRAL part of the technologic research whereby a new chemical is developed, the physiologic and toxicologic properties of the product should be investigated. These properties are just as much a part of the advantageous or disadvantageous potentialities of the material as are its physical and chemical properties. It may well be found by relatively simple tests that certain members of a group of apparently promising materials can be excluded promptly from consideration for certain industrial uses, on the basis of their toxic characteristics. At the same time, the recognition of some peculiar or unanticipated physiologic effect by this means may open up other fields of usefulness for an unfamiliar chemical.

Assuming that a given product passes its first toxicologic examination, and that it seems to meet the technologic specifications, the stage is set for a fuller investigation of its physiologic properties in relation to its projected handling,

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transportation and use. It is still not recognized generally by industrial organizations and by their medical advisers, that the producer of a commodity of this type has a social, if not always a legal, responsibility, to provide to handlers and users the toxicologic information and the practical instructions that are required for safety in their anticipated use of the product, or in lieu of such information, the effective warning that will deter them from an uninvestigated and possibly hazardous usage of it. Commercial considerations and intense competition in the chemical industry tend to dilute such responsibilities in a variety of ways, but it is clear that the general application of this principle is a primary necessity for safety in an industrial society. Do not let us delude ourselves in the belief that such safety exists at present, by pointing to what has been done. Our accomplishments in this direction have been notable but quite inadequate to meet the need.

The experimental program required to provide the necessary toxicologic information must either be reasonably comprehensive in the first instance, so as to leave little to chance, or else the investigation of potential physiologic effects must go on step-wise and piecemeal over the period of time required for the exploration and development of the uses to which a product may be put. In general, the former procedure turns out, eventually, to be the least costly. It must be admitted that the cost of a comprehensive and practical toxicologic investigation is considerable, and that the economic burden thus put upon a new product, in its earliest commercial competition with other available materials, may be sufficient to tip the scales against its successful exploitation. Despite this fact, if one or the other of the procedures indicated above were to become the conventional and regular practice of the chemical industry, large and small, it would create no serious obstacle to prudent progress, but would operate only against those commercial developments that create unwarranted risks. One of the factors which delays progress in this direction is that those who hasten to exploit new products without regard to industrial and public health and safety, whether from ignorance or indifference, tend to set the pattern on the basis of competitive cost. The result is that little toxicologic information is obtained in advance on materials that must compete rigorously for commercial position. Fragmentary or controversial data, and information buried in confidential files, serve little useful purpose. Rather, it is necessary that adequate and reliable information be obtained and disseminated through conventional channels, for the economic and hygienic good of the community as a whole.

Adequate Toxicologic Information

WHAT is adequate information, and how can the adequacy of the information be determined? Here we must give statement to a few simple but far-reaching principles, which are ignored all too frequently by those who should know better, and which are not apprehended at all by many who accept professional responsibilities for the health and safety of industrial workmen.

The preliminary toxicologic investigation of a new chemical, as well as that which later provides the basic information by which the effects of occupational exposure may be anticipated with a reasonable degree of assurance, must be carried out on experimental animals in most instances. By such means, however, one can only determine the *probable* effects which may be sustained by human beings under conditions of occupational exposure. Determination of the toxic effects of a single large dose or of multiple doses of a material over short periods of time has only a limited value, since it often happens that prolonged exposure to relatively small quantities of a substance induces effects that differ widely, both qualitatively and quantitatively, from those which follow brief periods of more rapid and greater absorption. Experimental conditions, which are tolerated over prolonged periods by several divergent species of animals without giving rise to any toxic effect, point the way to tentative specifications for safe human exposure, and when such specifications are laid down by competent investigators whose judgments are backed up by broad physiologic experience, they can be accepted with only that reservation which must always obtain when the experience of human beings is lacking.

Our present conventional procedure, which admittedly constitutes a great advance in practice over that of an earlier period, is to give the specifications for a non-hazardous working environment in terms of the "maximum allowable concentrations" of gases, vapors and particulate substances in the atmosphere of workrooms. Anyone who knows anything about industrial plants and materials and the habits and predilections of workmen realizes the fallacy of limiting the scope of toxic industrial hazards to atmospheric contamination, but we are so prone to accept any current conventional pattern of thought and procedure, that some of us find it difficult to think seriously of occupational hazards that do not involve the respiratory avenue of exposure and absorption. This is true despite the well known fact that many of the solvents can cause fatal intoxication when absorbed through the skin, under conditions which involve little or no absorption by any other route. To return to the "maximum allowable concentrations," no one of these is acceptable as an established standard for a safe atmospheric environment for a human being until the facts with reference to a representative human population have been established by prolonged, meticulous, clinical observations, correlated with prolonged, precise and representative determinations

of the prevailing concentrations in the atmosphere to which such a population has been exposed. In how many instances have these procedures been followed, and where are the data, obtained by industrial physicians, in evidence of the facts? They have not been sought often, and they are not being sought by many of the present breed of industrial physicians. Instead of using the methods which they alone have the opportunity and ability to apply, our industrial physicians ignore these procedures of preventive medicine in favor of treating the victims, or else they search in vain for criteria of safety in the literature of industrial toxicology and clinical medicine, in the apparent belief that such information can be plucked out of the air by some kind of scientific sleight-of-hand.

It is futile and inept on the part of industrial physicians to criticize the inadequacies of the "maximum allowable concentrations," and the efforts and methods of the industrial hygiene engineers, who work carefully and vigorously and sometimes with unwarranted faith in standards which have often been established by laboratory toxicologists without knowledge of industrial conditions and practices and without access to human subjects or industrial employees. The physician in industry often has the means of obtaining the necessary information merely through the exercise of the knowledge and skill which may properly be expected of the medical specialist in industrial health. He can and should know the means by which hazardous environmental conditions can be recognized and appraised, and certainly he can be expected to gauge the effects of such hazards. He will often need the help of persons of different technical training than his own in studying the nature and severity of the hazard, and also in bringing it into control. To a considerable extent such persons are available, and if the physician does not call upon them for assistance and collaboration in the solution of these problems, he is failing to make use of the conventional procedures of his professional field.

Practical Application of Toxicologic Information

WE COME now to the application of the information available whether it is adequate or inadequate. In connection with any industrial operation which requires the use of a solvent, the first procedure is the selection of the right material.

Selection of Solvent

OBVIOUSLY a choice will be made initially on technologic grounds, but certainly this is not the only basis for intelligent choice in a modern well-managed industrial plant or organization. It is fair to say, on the basis of experience, that practically any solvent can be used with safety under suitable conditions. On the other hand, the precautions required to insure safety vary greatly with the manner and site of the use. It is one thing to control the conditions of use in a localized industrial plant possessed of facilities of various types that can be applied to the problem. It is quite another to establish and supervise the necessary procedures in a large number of small establishments in which a few people work, as for example, in the many units of a military organization. Then too, the difficulties of avoiding exposure to a solvent used in an open operation are enormous as compared to those carried out in a closed system. The latter is not always feasible for obvious reasons.

The choice, once made, determines the nature of the equipment required for the purpose, the convenience of the operation, and the cost incidental to adequate protection of the personnel, and unless these matters are taken into account in advance, it is a blind man's choice. One wonders why this fact does not trickle through into the intellectual processes of more of industry's management, and the only answer that seems to come is that the facts of life with respect to industrial health are not presented to them in simple and forceful terms by their medical advisers.

Protection of Personnel

A PROGRAM for the protection of exposed personnel must now be developed and put into effect. This may be simple or elaborate, inexpensive or costly, sharply localized or widely distributed, dependent upon the situation. The presumption, at this stage, in an intelligently operated industry, is that the general range of toxicity, the modes of absorption, whether through the skin or through the respiratory tract or through both, and the type of clinical effects to be anticipated, in relation to a chosen material, are known. If skin exposure is to be dealt with, the problems of percutaneous absorption, cutaneous irritation and cutaneous sensitization must be appreciated and dealt with appropriately. If inhalation is to be guarded against, criteria for safe atmospheric contamination must be adopted and implemented by an adequate and accurate program of air analysis. Such a program varies in scope with many factors, and the planning here is not a job for a novice. In either or both of these situations a program of medical supervision, tailored to the nature of the hygienic problem, is required. The medical job may be easy and inexpensive, thus making few demands on skill and ingenuity, or it may be quite difficult, elaborate and costly, requiring much skill and knowledge bought only at the price of practical experience.

Protection begins at the point at which a solvent is manufactured, goes along with the product until it reaches the point or points at which it is to be used, and attends the operations in which it is used. The chain of hygienic control, in the form of information, instructions to personnel, warning labels, environmental appraisal

and control, and medical supervision, each to the extent that is needed, is the responsibility of the medical and hygienic personnel of the industrial organization, and to the extent that these are capable, honest, and armed with appropriate authority, they do their job well or badly.

THIS in brief is the solvent problem. There is nothing mysterious about it, nothing that will not yield readily to the conventional methods of toxicologic and environmental investigation. Its solution is equally lacking in imponderable difficulties, requiring only the application of the disciplines of preventive medicine and engineering in the field of industrial health. In short, the entire solution is one of recognizing that there is a problem, of having a sincere desire to solve it, and a willingness to implement that desire by methods provided by present professional experience.

Color and Personality

DURING the war, Faber Birren and his associates went into the factories and quietly observed the rivet workers and the woman workers on the delicate bomb sights. Here the accident rate was high and efficiency was impaired by the quick fatigue of the workers. They put up shields so that movements behind the equipment were shut out. They painted the shields a color that blended with the machinery the operators were using. "Then we painted the walls a soft color with one blue wall at the end of the factory for relaxation of vision." As a result of his work in this field, Mr. Birren maintains that "the right illumination and right color are worth about $139.25 annually an average employee in American industry today." Evidently he is able to convince even New England Yankees of his point, for he has just finished "colorizing fourteen banks in Boston. Color and how it affects the individual are what he is most interested in, this authority explained. "What is your favorite color?" he asks. The answer is revealing: Yellow is the color of the intellectual, he says, preferred by women more than men. "Red people are out-going and vigorous, the 'General Patton type.'" Blue is the favorite of introverts. This color belongs to the Nordic race, he declares, which is conservative. Ask a back-slapper his favorite color or watch his ties, and 10 to one you'll catch a hint of orange, Mr. Birren believes. These men and women are independent, happy-go-lucky, often bachelors or career girls—only happy married to a "blue or purple" type. The person who prefers blue-green, purple or a combination of hues in tints and shades is one of discrimination, many times very artistic, according to his studies.

—From "Decorator Tells How Colors Act on Personality," by HARRIET JEAN ANDERSON, in *New York Herald-Tribune*, May 22, 1950.

Cyclohexylamine, p-Chlornitrobenzene, 2-Aminopyridine: Toxic Effects in Industrial Use

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THE following paper is not an attempt to present a full-scale toxicologic investigation of any of the three chemicals mentioned in the title. Exposure of human beings to chemicals of this kind obviously occurs in an unplanned, accidental way, usually under circumstances that cannot be repeated. Nevertheless, the fragmentary data acquired in this manner do have some value as benchmarks. The animal experiments described were carried as far as we thought necessary to answer certain practical questions about the degree of hazard that would exist in manufacturing operations, and thus lack the statistical precision which might have been attained by using more anir als and more time.

Cyclohexylamine

THE toxic properties of cyclohexylamine were briefly described by Carswell and Morrill[1] in 1937, quoting Flynn. The acute lethal dose when the compound was injected in rabbits was 0.5 gm. per kilogram. Rabbits, guinea pigs and rats were able to survive for 82 days a daily oral dose of 100 mg. per kilogram. Lethal doses of the material caused death by convulsions. The liquid was recognized as a strong base, with caustic effects on the skin. The strong disagreeable smell of cyclohexylamine, and its intensely bitter taste provide good warning properties.

Our first clinical case of exposure to cyclohexylamine occurred in a chemical operator, aged 42, who was exposed to the vapor for about an hour. No air sample was obtained, and the concentration can be judged only by the operator's description. He noticed a strong, fishy smell, and immediately opened all windows and doors to secure maximum ventilation. He immediately had a sensation of light-headedness and felt great anxiety. A few hours later, he felt faint while changing his clothes. He had no appetite for his evening meal, and felt a continuing restlessness and apprehension, which prevented him from going to sleep. There was some burning in his throat, and he noted rapid heart-beat. Physical examination the next day revealed nothing abnormal. The pulse rate and blood pressure were unchanged, though he still complained of anxiety.

No opportunity presented itself to measure air concentrations under similar circumstances. Measurements made later provided values of 4-10 parts per million, and this exposure caused no symptoms of any kind in the operators.

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Our second clinical case occurred in an operator, aged 27, who was separating cyclohexylamine from an underlying layer of strong caustic solution in a still. The outlet pipe became obstructed with solid caustic, and he attempted to clear it with compressed air. The hose blew off the pipe, spattering him with caustic solution in which there was some dissolved cyclohexylamine. He appeared at the plant dispensary with one side of his face very red. In this red area were numerous small white spots, where the alkali had coagulated the skin. He reported merely that he had been splashed with caustic, and only later did we discover the fact that cyclohexylamine had been present. Thorough washing and the application of large wet packs of boric acid solution soon relieved the burning, and much of the redness disappeared. However, about one hour after the accident, the patient became nauseated and vomited. Physical examination at this time revealed normal pulse and blood pressure. The patient seemed drowsy, and his speech was slightly slurred. His pupils were widely dilated, and reacted only weakly to light. He denied any blurring of vision or diplopia. The extraocular muscles were tested and found to function normally. Vomiting recurred twice, at intervals of about 20 minutes; the vomitus was bile-green fluid. This man was completely well the next day, except for a few small crusted ulcers on the side of the face.

The third case was the supervisor of the process, who never came to us as a patient, but stated that on several occasions he was exposed to cyclohexylamine vapor, and invariably became nauseated, though he never vomited.

We exposed rabbits, guinea pigs and white rats to cyclohexylamine vapor seven hours a day and five days a week. Average concentrations were 1200, 800 and 150 parts per million in three different experiments. At the highest concentration, all animals exhibited signs of extreme irritation of the mucous membranes, and all but one rat died after the first seven-hour exposure. Hemorrhagic areas were noted in the lungs. At 800 parts per million, a rabbit and two guinea pigs died after the second seven-hour exposure, but five rats survived 24 hours of exposure. At 150 parts per million, four out of five rats and two guinea pigs survived 70 hours exposure, but one rabbit died after seven hours. The higher concentrations of vapor caused the corneas of all the animals to become opaque.

To summarize, the chief effect of cyclohexylamine vapor in animals appeared to be irritation,

probably attributable to its strong alkalinity. No convulsant effects were observed at the levels tested. The symptoms of our first patient could not be distinguished from those that might be caused by fright or anxiety, but those of the other patients seem to indicate that the chemical has a definite nauseating and emetic effect in human beings.

p-Chlornitrobenzene

BECAUSE p-chlornitrobenzene is so closely related to nitrobenzene, one would expect similar toxic properties in the two compounds. Renshaw and Ashcroft[2] reported four cases of poisoning in human beings in 1926. The symptoms were nausea, vomiting, cyanosis and shortness of breath on exertion. A mild anemia developed during the week after exposure. Gelfins[3] exposed two cats and two guinea pigs to the vapor of this compound eight hours a day for six weeks, and noted methemoglobinemia and slight anemia. The air concentration was 0.087 mg. per liter, or about 9 ppm. A similar effect has been observed in dogs when the chemical was injected subcutaneously.[4] It produces toxic effects when absorbed percutaneously.[5] Schwanke[6] reports a case of combined poisoning involving p-chlornitrobenzene and nitrotoluene. The victim showed intense methemoglobinemia and involvment of the central nervous system leading to paralysis. Our own experience has been as follows:

A group of 12 chemical operators was exposed to this compound intermittently over many months during the manufacture of diaminodiphenyl sulfone, and during this period there were many vague complaints of tiredness, loss of appetite, headache and afternoon fatigue. These complaints finally became a subject of group anxiety, though all admitted they did not feel really ill, and there were no actual visits to the plant dispensary, nor any absences from work. Physical examinations of these workers at that time revealed no disease of any kind; in fact, the men appeared more fit as a group than the average factory worker. In particular, exercise tolerance tests showed good circulatory efficiency. A review of the periodic blood counts of this group disclosed no departure from the normal range exhibited by workers in other buildings, and no change from the normal range of the exposed workers in the years past. Many other chemicals were being handled in the same building, and our attention was not attracted to p-chlornitrobenzene at the time. Later, at the suggestion of the supervisor, suspicion was directed to this compound and a number of air samples were taken during the manufacture of diaminodiphenyl sulfone. Exposures in this process were short and intermittent, and occurred chiefly during the charging of the reaction vessel, the removal of cake from a filter press, and the operation of a centrifuge. These operations lasted from 30 minutes to an hour. Because of the strong and disagreeable odor of the product, the operators voluntarily wore gas masks when exposed to the higher concentrations. Fifty-one samples taken during the survey showed concentrations varying between 1 and 61 parts per million, with an average of 13.7 ppm. In view of the fact that the maximum allowable concentration of nitrobenzene is listed as 1 ppm. we were surprised that more definite symptoms and signs failed to appear in these workers. At the time of the survey, there were no medical complaints, and no worker showed any methemoglobinemia.

We exposed cats to p-chlornitrobenzene vapor for seven hours a day and five days a week. The average concentrations ranged from 25.9 to 2.8 ppm. At 25 ppm. one cat died after seven hours and one cat survived. At 6.5 ppm., one cat died after 74 hours of exposure. At 3.3 ppm., one cat died after 24 hours of exposure. At 2.8 ppm., one cat survived after 198 hours of exposure. All the animals lost weight, all presented the chocolate-brown blood of gross methemoglobinemia at various times, and the two which had long exposures developed anemia. Sections of tissue from these two animals showed deposits of blood pigment, with damage to the liver and kidney.* In summary, the vapor of this compound is toxic to cats chronically exposed at rather low levels, but intermittent exposures of workers produce surprisingly few effects.

2-Aminopyridine

2-AMINOPYRIDINE was reported to be a convulsant poison with effects resembling strychnine by Dingemanse[7] and again by Efimov and Bednyagina.[8] The convulsant dose was approximately 2 mg. per kilogram in frogs and cats. One case of human intoxication was reported by Schmid.[9] The patient had a severe headache and weakness. Later, he collapsed, and was hospitalized, where he had epileptiform convulsions, followed by a stuporous state lasting several days.

We are able to report the symptoms which occurred in one case of acute exposure to the dust and vapor of this compound. The patient was a chemical operator, 23 years old, who had been running several hundred pounds of 2-aminopyridine through a hammer-mill. He did not use any protective equipment. After about five hours of this work, he presented himself at the plant dispensary complaining of a severe pounding headache and nausea. Physical examination was negative except for a pronounced flushing of the skin on the arms, chest and face, and an elevation of blood pressure. The pressure on admission was 140/100; after the patient had been lying down for a half hour, the pressure rose to 150/110. His blood pressure at the time of employment, 12 months previously, was 130/82. The symptoms of headache and nausea subsided in about 10 hours, and the patient had

*The cooperation of R. K. RICHARDS, M.D., is gratefully acknowledged.

completely recovered the next day. One air sample was obtained subsequently while this process was repeated. On this occasion, however, the work was done in the open air, and the operator wore a mask. The concentration at the operator's breathing level was found to be 0.02 mg. per liter, or 5.2 ppm. Assuming the first operator to have been exposed to this concentration, his total absorption of the material would have been about 50 mg.

During the years when sulfapyridine was in demand, many hundreds of pounds of aminopyridine were handled in our plant, with no toxic effects. This is probably explainable by the fact that the material was never handled in the dry state.

Chemical Methods

DETERMINATION OF CYCLOHEXYLAMINE: The simplest method for the determination of cyclohexylamine is absorption of the vapors in standardized acid and indirect titration with standardized alkali.

Reagents: Hydrochloric acid, 0.01 N. Sodium hydroxide, 0.01 N. Bromthymol blue indicator (0.1 gm. bromthymol blue dissolved in 100 ml. of 50% alcohol).

Apparatus: All-glass absorbers with sintered glass or aloxite bubblers. Standard burettes.

Procedure: The sample is collected in 40 ml. of 0.01 N HCl at the rate of 1.5 liters per minute. At this rate of flow the collection efficiency is 100%. The contents of the absorber are transferred quantitatively to a titrating flask. Two drops of indicator are added and the solution is titrated to the end point with 0.01 N NaOH. A blank is also titrated. The difference in the amount required for the blank and the amount required for the sample is the amount of 0.01 N HCl which reacts with the cyclohexylamine. One ml. of 0.01 N HCl is equivalent to 0.992 mg. cyclohexylamine.

Acidic and basic substances will interfere. If the presence of interfering substances is suspected, the method described by Watrous *et al.*[10] may be used.

DETERMINATION OF P-CHLORNITROBENZENE: This method for the determination of p-chlornitrobenzene is essentially the method used by Baernstein.[11]

Reagents: Fuming nitric acid, specific gravity 1.5. Potassium hydroxide, 70%. Chromic acid, saturated aqueous solution. Methyl ethyl ketone (butanone). Standard solution of p-chlornitrobenzene in fuming nitric acid (20 micrograms per ml.)

Apparatus: Glass stoppered U-tubes (approximately 105 mm. high and 16 mm. in diameter). Glass beads (3 mm.). 25-ml. burette with jacket. Jacket may be made from 30-mm. pyrex tubing and attached to burette by means of rubber stoppers. Holes for water inlet and outlet tubes are bored in the rubber stoppers and a thermometer hole is bored in the upper stopper. Klett-Summerson Photoelectric Colorimeter (Filter 540).

Procedure: The glass equipment is prepared by degreasing the stop-cocks and stoppers and lubricating with colloidal graphite. The sample is collected in 3.0 ml. fuming nitric acid in the U-tubes filled with glass beads. The tube and contents are heated in an oil bath at 90°C for 30 minutes.

The contents of the sampling tube are transferred to a 125-ml. glass-stoppered flask with the aid of three 2-ml. portions of water. The flask should be in an ice bath during this operation. The flask is removed from the ice bath and 1 drop of chromic acid solution is added. The mixture is then neutralized with 70% potassium hydroxide until the dichromate orange changes to chromate yellow green. The heat of neutralization is sufficient to prevent the precipitation of potassium nitrate. Ten ml. of butanone are added to the flask and the contents are vigorously shaken for 30 seconds. The flask is placed in a water bath at 60°C and shaken occasionally during a 10-minute period. The sample is poured into a jacketed burette which is kept at a temperature of 60°C and allowed to separate. Beads are caught in a funnel which has a fragment of glass tubing to prevent closure of the stem by the beads.

The lower aqueous layer is separated and discarded. The butanone layer is drained into a 25-ml. glass-stoppered cylinder. Ten ml. of 70% potassium hydroxide are added and the cylinder is shaken for two minutes. The layers are allowed to separate and the upper butanone layer is transferred to colorimeter tubes. Readings are made in the colorimeter with a 540 filter against a blank set at 0. Concentrations are determined by comparison with a previously prepared standard curve. If the color is too dark to read, the butanone layer may be diluted quantitatively. The violet to deep purple color indicating the dinitrochlorobenzene compound is not stable and should be read within five minutes after shaking the mixture.

Standard curve: Ten, 20, 30, 40, 50 and 60 micrograms of p-chlornitrobenzene are placed in glass-stoppered U-tubes. The volume in each tube is brought to a total of 3.0 ml. by the addition of fuming nitric acid. The tubes are then heated in an oil bath at 90°C for 30 minutes and the procedure is carried out as previously described. Some mechanical losses occur in the procedure so it is necessary to duplicate procedure exactly for both unknowns and standards. The standard curve is a straight line from 10 to 60 micrograms.

Collection efficiency was determined by placing a second U-tube in series with the nitrating tube. The efficiency of the first tube at flows up to 200 cc. of air per minute is above 99%.

DETERMINATION OF 2-AMINOPYRIDINE: This method is based on the color formed when

certain amines are heated in the presence of quinone and acetic acid.[12]

Reagents: Test reagent. One gram of quinone dissolved in 5 ml. glacial acetic acid and diluted to 100 ml. with 95% alcohol. Standard solution of 2-aminopyridine in water. (0.2 mg. per ml.).

Apparatus: M.S.A. Midget Impinger with sintered glass filter stick. Klett-Summerson Photoelectric Colorimeter (Filter 590).

Procedure: The sample is collected by drawing the air through the absorber at the rate of 1.5 liters per minute. At this rate of flow the collection efficiency is 100%. The absorbing medium is water. To 5 ml. of the absorbing solution, 5 ml. of the test reagent are added. The contents of the tube are mixed by shaking and placed in a boiling water bath for 15 minutes. The tubes are removed from the bath and cooled. The solution is placed in colorimeter tubes and read with 590 filter against a blank set at 0. The color indicating the presence of amine is currant red to violet red. The color is stable for several hours.

Concentration is determined by comparison with standards run at the same time.

Standards: One tenth, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, and 1.0 mg. of 2-aminopyridine are placed in tubes. Sufficient water is added to bring the volume to 5 ml. Procedure is carried out as with the samples. The standard curve does not follow Beer's law, so the unknowns should fall within the standard range for proper evaluation. Time and temperature are important in the development of the color. The best procedure is to run three to four standards with every group of unknowns.

Summary

SYMPTOMS resulting from industrial exposure to cyclohexylamine, p-chlornitrobenzene and 2-aminopyridine are described.

2. Effects of cyclohexylamine and p-chlornitrobenzene vapor on experimental animals are described. Cyclohexylamine acts chiefly as an irritant and causes nausea and vomiting in human beings. p-chlornitrobenzene causes methemoglobinemia and hemolytic anemia in cats chronically exposed to levels approximating 3 ppm.; it does not affect workers intermittently exposed to levels averaging about 14 ppm.

3. 2-aminopyridine, in one case, produced headache, nausea, cutaneous flushing and transient hypertension in a subject exposed five hours to approximately 5.2 ppm.

4. Chemical methods for determination of the three substances in air are described.

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Oldest Known Disease

HEAT STROKE or sun stroke is the oldest known disease. The ancients associated the disease with Sirius, the dog star, and dog days, probably because in the summer months Sirius follows the sun and is visible in the evening twilight. The oldest records of the disease are the biblical cases. In the 4th Book of Kings, Chapter IV, is found: "And the child grew and on a certain day when he went out to his father to the reapers, he said to his father: My head acheth, my head acheth .... and when he had taken him and brought him to his mother she set him on her knees until noon and then he died." In the Book of Jude, Chapter VIII, is found, "And her husband was Manasses who died at the time of the barley harvest where he was standing over them that bound sheaves in the field and the heat came upon his head and he died in Bethulia his own City and was buried there with his fathers."

—From "Heat and Muscular Work," by LOYAL A. SHOUDY, M.D., and ANNA M. BAETJER, Sc.D., in *Surg., Gynec. & Obst.*, 62:475 (February 15) 1936.

The Toxicologist and Industrial Toxicology

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WHILE it is common practice to differentiate toxicology into industrial and non-industrial divisions, it seems to me that not sufficient consideration has been given to the area of their overlapping. This division appears to have been based on the evidence, real or alleged, that the morbidity or mortality in a given case is associated with or occurs during use of a noxious agent or hazardous procedure used in industrial processes. The industrial toxicologist is interested in the prevention of such "on the job" morbidities, and hence there have been established maximum allowable concentrations for many of the toxic substances used in industry. As a second step, proper procedures such as ventilation, maximum working time, and masks, have been instituted for the protection of the worker. I believe it is not uncommon that the employee disregards the safety devices for one reason or another, and hence, in spite of all precautions, disabilities and deaths do occur. In other cases, insufficient attention has been paid to the safety of the people involved. This toxic agent or process-employee relationship is a reasonably controllable item. The facts are known, and thus solution of the problem can be expected.

But what about those cases in which all the factors are not known and an industrial injury may be due to a non-industrial substance? I take it as established that no employer would permit a person unquestionably drunk to take part in an industrial procedure. There is no doubt that an individual under the influence of alcohol does not have critical judgment, and therefore must be barred from doing anything requiring this faculty. Much more important, however, is the consideration of the person who is not ostensibly drunk but who has had something to drink. It is so well known as to defy argument that the action of alcohol is one of depression. Accompanying the dulling of the higher mental faculties there is a removal of inhibitions so that the individual is no longer in competent relation mentally to the work he is doing. Add to this the retarding of reflexes, and it is easily seen that one who has been drinking but who is not recognizably drunk is a distinct industrial hazard—not only to himself but to his co-workers as well.

As a corollary to the use of alcohol one must also consider the effect of substances taken as self-medication or on the advice of a physician. Self-medication is a national habit and, while there is some attempt at government control of the sale of medicinal substances, it is quite evident that, except as to narcotics and marihuana, such control is far from adequate. The amphetamine-barbiturate complex is all too common—the one to give a lift, the other to quiet. The barbiturate consumption is appalling, and the effects of this group of drugs are quite similar to those of alcohol—even to the hangover which many attempt to correct by the use of amphetamine or a similar substance. Certainly the employee with a barbiturate hangover is just as poor an individual risk as one suffering the after-effects of alcohol.

While many institutions offer free medical service to employees, it is common for patients to consult the family physician, and, since pain is one of the most common complaints, it is to be expected that many prescriptions are for analgesics. The complexes grouped loosely as neuroses usually are treated with the prescribing of barbiturates or compounds of similar actions. One must not fail to mention the common use of cough mixtures containing codeine or another depressant. I mention these as examples, fully realizing that many more could be cited.

The recent accent on antihistamine drugs involves both self-medication and physicians' prescriptions. One cannot neglect the depressing action of this group of drugs, admittedly varying in commonness with the various antihistaminics, but as far as I know not one of this group is entirely free from such a side action, and there is no way to tell, except from previous experience, just what reaction may be expected.

It does not seem necessary to give further examples. The point I wish to make is that one constantly must keep in mind that all instances of industrial mishaps are not necessarily due to industrial agents even though an individual may be exposed to the noxious effects of such substances. One cannot conclude, without development of a rather complete history, that the industrial agent is the cause of the morbidity, nor, conversely, should the blame be placed on medication. The part played by either or by both should be assessed fairly.

In passing, I should like to remark that in spite of excellent Federal circumscription, the use of narcotics and marihuana is still a significant factor in our social and, hence, industrial existence.

Based on my experience, I wish to emphasize that a thorough and competent history *including extra-industrial phenomena* must be developed before attributing a morbidity or mortality entirely or in part to an industrial agent. On more than one occasion we have found a substance not of industrial origin in cases where an analysis for a specific industrial agent has been requested.

I noted previously that individuals have family physicians or attend clinics, or become inmates of

charitable or other hospitals. This occurs both during a period of employment, and commonly after employment has terminated. With a frequency that is significant we find cases thus occurring in practice which in fact had their origin in industry. Since lead is still a common industrial hazard I shall use it as an example. We are asked all too frequently to determine whether a case is one of lead poisoning. I must admit that many of these requests are made by interns and practicing physicians as an exclusion factor in diagnosis, although they usually are able to find a reason, definite to them at least, for suspecting lead intoxication. From our experience in this area, anyone with abdominal cramps or some muscular weakness is going to be considered a possible lead case. Of course most of them are not.

I SHOULD like to interject here a point which seems obvious but certainly is not fully appreciated by many physicians, and particularly by interns; the toxicologist cannot make a diagnosis of lead intoxication merely from the examination of a 24-hour urine specimen. There is more to the diagnosis of lead intoxication, or in fact any intoxication, than the interpretation of a chemical analysis of a specimen. It is important to be sure, but while suggestive and important, standing alone it is a rather helpless factor. It is disconcerting not to find, so frequently, a history of, or merely a scant word or so concerning the person's occupation. Much time would be saved in treating many patients were a detailed history of occupation taken. I might cite the case of a man who because of his being a spray-painter was considered to have lead intoxication, but had a very low excretion of lead in the urine. Closer questioning revealed that he was working with lacquers which did not contain lead, and there was no history whatever of exposure to lead.

One might continue in this vein using other agents as examples, but beyond confirming the above points nothing more would be established.

I should like now to touch on the subject of proper specimens for toxicological analysis. It is rather disturbing to receive material for evaluation which has been collected and handled improperly, knowing that the report submitted will become a part of the person's legal history, and that eventually a question of compensation may be decided finally on such a report. I shall use carbon monoxide and lead as examples to indicate that, unless proper precautions are taken, the report may be detrimental to the employer or the employee.

We are asked commonly to determine the degree of saturation of the blood with carbon monoxide, and too frequently the small sample is submitted in a partially-filled, poorly-corked bottle. While carbon monoxide-hemoglobin is a quite stable compound, the gas is liberated and may be lost. Of course there is no way for the toxicologist to know how much carbon monoxide has been lost; and when a history is given which would indicate carbon monoxide intoxication and the blood shows definitely sub-lethal quantities, it is difficult to state that the gas has been lost because of inadequate handling or that the quantity present is actually the amount absorbed and hence is not a factor; or that the sub-lethal quantity of gas was able to induce disability or death when its effects were added to existing pathological changes such as might be present in the cardiovascular system, for example. It is imperative, when blood is submitted for analysis of any gas, that the container be completely filled and the cork sealed to the bottle with paraffin or some other non-reactive and gas-impervious material.

In the case of lead, not sufficient recognition of its ubiquitousness is considered. We feel that a 24-hour urine specimen is more indicative of lead excretion than are spot samples. Too commonly there are submitted such collections in soft-glass bottles corked with paper toweling or a similar substance. We even have had samples submitted which contain particulate matter such as cigarette butts.

It is obvious that analysis of such material is of no actual value, and that the quantity of lead found would be detrimental to the employer and in favor of the individual. This is the reversal of the consequences as indicated above when carbon monoxide was considered. Sufficient consideration should be given to insure that the sample submitted is truly representative of the individual case.

SUMMARY: In this rather brief discussion I have tried to indicate that there is considerable overlapping of the fields of industrial and non-industrial toxicology, and that the true picture of any case can be had only by a thoroughly complete history which considers not only the industrial hazard but also the taking of various medicaments. It is within reason to suggest that an industrial hazard becomes more of a hazard to persons who have taken drugs either as self-medication or on prescription. On the other hand, cases occurring in civil practice may prove to be of industrial origin after an accurate detailed history of occupation is obtained. The third point I hope to have made is that the submitting of proper samples for analysis is just as important as the history. An inadequately obtained sample may be as unfair to the employer as to the employee.

(1853 Polk St., 12)

Medicolegal and Social Problems of Non-Occupational Temporary Disability Benefits

MARY DONLON,
Chairman, New York State Workmen's Compensation Board,
New York City

IN NEW YORK State, on July 1, 1950, we shall be completing 36 years of continuous administration of the social insurance for worker disabilities known as workmen's compensation. On that same day, we shall be beginning the administration of a new social insurance for worker disabilities, providing benefits for non-occupational or off-the-job disabilities. These two programs which together provide weekly cash payments partially to replace lost wages during disability regardless of whether it is employment connected, constitute a heavy charge on the production of goods and services in New York State, a charge that will aggregate close to 375 million dollars annually.

That is a lot of money. It is a serious competitive burden for one state to carry in national and world markets for goods and services unless there are considerable compensating advantages. We believe there are such advantages.

We point with considerable pride to a highly efficient labor force, including a large percentage of skilled workers. We have good labor laws and good work conditions. In New York State there is a well recognized tradition of successful labor relations, relatively little serious industrial controversy, effective mediation of disputes, and fewer man days lost due to disputes than in any other great industrial state.

Our tax-supported relief costs are reduced, and the reduction recognized publicly by state and local Budget Directors, because of our two disability insurance programs.

Our social insurances have improved public health and helped spread good medical and hospital care throughout the state. The prompt payment to physicians, through insurance, of their fees for treatment of work-connected disabilities, an annual disbursement upwards of 50 million dollars spread among "free choice" physicians all over the state and in payments to hospitals, has been a significant factor in increasing the attractiveness of New York State as a good state in which to practice medicine. In contrast to states where medical care under social insurance programs is concentrated among a relatively few insurance physicians and their hospitals, "free choice" in New York State has spread opportunities widely among the profession to render medical care to workers and their families. Even small-town practice offers the backlog of workmen's compensation as an incentive to local physicians. Workmen's compensation has been a real help in the distribution of good medical and hospital care.

Presented at the Thirty-Fifth Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Chicago, April 25, 1950.

WHETHER we fully realize it or not, the successful administration of privately insured social insurance programs is important to us all. The cost of medical care is a heavy burden on wage earners that cries out to be distributed. Workers today, and their families, require the protection of insurance providing income maintenance against the risk of wage income stoppage. It is not possible to consider as a feasible mid-twentieth century alternative failure to provide social insurance. The choice, viewed realistically, is between privately-insured and tax-supported programs. I believe that all save those who are socialists by conviction, and, of course the communists, understand that the privately-insured social insurance programs are preferable. Some people, however, believe quite sincerely that privately-insured social insurances cannot be administered successfully. I am here to tell you something of our New York experience, in the hope that it may be accepted as evidence that successful administration of privately-insured social insurance is possible.

The same kinds of recurring scandals that often have plagued workmen's compensation here in the states were, in large part, responsible for a deep-seated dissatisfaction among workers in Europe with private insurance as a method of providing disability benefits and medical care payment or reimbursement. There was in Europe the same reluctance of the insurance industry to recognize needs that here gave impetus to Blue Cross and Blue Shield to meet those needs, but in Europe the unsatisfied needs were not met by hospitals and physicians. All these dissatisfactions resulted in an accumulation of pressure over the years that finally eliminated insurance and substituted tax-supported social programs just as soon as workers became organized effectively for powerful political action.

There is no great mystery about successful administration of those social insurances that provide disability benefits. Only the best is good enough, and unhappily that has not always been recognized by insurance companies, legislatures, governors, employers, or by the medical profession itself.

ANY program that deals with people when they are sick or injured, must treat with them individually, each having a problem personal to himself. Where there are millions of workers within the program, hundreds of thousands receiving the insured benefits each year, the task that faces administration is somehow to combine the techniques of mass processing as applied to paper work for maximum speed and efficiency,

with the personalized attention to claimants that their needs and problems require. That may sound simple. It is, of course, not at all simple. We all know that whenever a disability insurance program bogs down administratively, it is either because the paper work has been permitted to slow down to the point of inefficiency, or because workers for whom the insured benefits are intended revolt against being treated almost as though they were so many robots, without recognition of their individual distinctions and their differing problems and personalities.

The reason sick and injured persons must be treated as individuals by workmen's compensation administrators is, of course, the same reason why the maintenance of a personal doctor-patient relationship is so important. This gives the medical profession the opportunity of setting the tone of workmen's compensation administration. It will be either well keyed or off key, according to the quality of understanding of the problem by the leadership in the profession and their insistence, both within their own rights and to responsible state officials, on good administration.

This, of course, is not to say that physicians alone could or should administer a disability insurance program. It is to say, however, that the attitude of the medical profession toward the program, their comprehension of the needs and problems of those whom social insurance is intended to serve, their professional competence and willingness to make it available for workers entitled to social insurance benefits, and their professional integrity under pressures sometimes exerted by those who stand to profit, one way or the other—all these are essential contributions the medical profession can and should make and on which administration must be able to rely.

The medical profession is the key to successful administration of any disability insurance program, private or public. Where the disability insurance program is one provided for workers through statutory mandate, their personal sense of satisfaction with the results of cooperation between responsible state administrators and the medical profession, or, on the contrary, their conviction that such cooperation is lacking, will determine here, as in Europe, whether the organization of workers for political action will also bring in its train the socialization of social insurances. It need not happen here, but nothing less than the thoughtful and purposeful full-time cooperation of the medical profession and the insurance industry with responsible state administration, will do. This is a time that calls for greatness and for constructive action. Recriminations and a yearning for the horse-and-buggy days will not do. They are, in fact, wholly ineffectual for the crises of our times.

In far too many states scandals in workmen's compensation have recurred with alarming frequency. In some states most of the time, and in all states at some time, the dissatisfaction of workers with the provision of workmen's compensation benefits, cash or medical or both, with delays in benefit payment, resulting in or caused by the indifference of real leaders of the medical profession and of state administration, have created as tough an administrative and political problem as any of the Governors have to face.

This is a problem of real magnitude. The size and scope of workmen's compensation in New York State is shown in the 1949 annual report of the Workmen's Compensation Board. Last year the Board closed 112,159 compensated cases with a cash benefit value, exclusive of medical costs, of $76,897,856. There were 774,057 work accidents reported to the Board last year. Many of these involved only minor injuries, but almost all of them called for some medical care. They represented an insurance and self-insurance cost of $260,000,000 to New York State employers.

The administrative and judicial effects of this tremendous volume of work are almost self-evident. In 1949, more than 3,750,000 claims papers were received and processed by the Board. There were 150,000 medical examinations conducted by staff medical examiners. Each workday, five days a week, 2,100 Referee hearings were held on scheduled calendars regularly each month in 97 cities and towns all over the state.

The extent of general satisfaction with workmen's compensation, even with decisions that were against the claimant or the carrier, is indicated by the figures as to review requests. Reviews asked by claimants in 1949 were less than 0.3% of all Referee decisions, and by insurance companies and self-insured employers only 0.4%.

In every case there was medical opinion. Often there was conflicting medical opinion. It is heartening to observe, as I am happy to say we do, that the earlier tendency of the busiest and most successful practitioners to eschew workmen's compensation practice and the treatment of disabled wage earners, is rapidly being replaced by their willingness to make their specialized skills and valuable experience available for the care and treatment of disabled workers. Increasingly, the medical evidence adduced in New York State workmen's compensation proceedings reflects, with scrupulous professional integrity, the diagnosis and prognosis of the physician-witness, without bias from his retainer. More than any other one factor, it is this improvement in the relations between state administration and the medical profession that accounts for the greater satisfaction of both employers and workers with workmen's compensation administration.

THIS same cooperation would be essential to the satisfactory administration of the new Disability Benefits Law. Integrity of medical certification underpins any insured disability program, whether private or public.

At least six million workers will come under the new non-occupational disability benefits program which becomes fully effective July 1, 1950. Cost of the pogram is shared by employers and

workers. Benefits are privately insured, self-insured, or may be insured with a competitive State Insurance Fund.

There is real flexibility as to the benefits that may be provided. This is no statutory strait jacket. Salary and wage continuance, almost any variation of cash benefits, and the provision of hospital, medical and surgical care insurance, are possible and indeed encouraged.

This is private enterprise social insurance. Not a penny of tax money goes into the program.

There are leaders among us who have no faith that people can help themselves. We of the present New York State administration believe they can. Other states are watching New York's experience under this new law, hoping it may be a beacon light to guide them, too, away from government provided, government dominated benefit programs.

"Better to light a single candle than to curse the darkness," an old Chinese proverb says. Here is an opportunity for us all to stop cursing the darkness and help to light the candle that may dispel it.

Self Medication

IT HAS been suggested that containers of antihistamine tablets be placed in convenient proximity to drinking fountains in industrial plants so that workers might help themselves when they felt a cold coming on. It would seem self-evident that no medications of any kind should be dispensed except through the company Medical Department. The uncontrolled dosage of even a relatively harmless drug might produce unforeseen damage in sensitive persons. The only possible exception to this rule would be the well-known salt tablets used in cases of exposure to extreme heat. There are many situations, even in the less hazardous occupations, in which a careless movement caused by drowsiness from taking antihistamine, might lead to serious injury. There is also a marked increase in likelihood of accident to the person who takes such a drug shortly before driving his car to or from work as many do. It should be emphasized once more that all drugs, (except salt tablets) should be furnished to employees only through plant Medical Departments under the direction of physicians who can determine the correct dosages for individuals.

—E. WARD THOMPSON, Industrial Hygienist, American Mutual Liability Insurance Company in *Loss Control*, April, 1950.

The Detroit Plan for First Aid and Emergency Medical Services in Small Plants

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MUCH time and effort have been expended by industrial hygiene agencies and many others to establish facilities in work places for the immediate care of injured or acutely ill workers. Large industrial organizations have gone far in establishing programs ranging from elaborate medical departments employing full-time physicians to first aid rooms employing full-time nurses. Smaller establishments of less than 100 to 200 workers have not responded to our promotional efforts.

In Detroit, long-time efforts to establish programs in which physicians or nurses render part-time service in the small plant have resulted in minimal returns.

Although some employers have made arrangements with industrial medical clinics for out of the plant pre-employment examinations and treatment of injuries, in-plant service has not developed proportionately. In view of the fact that about half of our workers are employed in these small establishments, some adequate solution of this problem has been of considerable concern to us.

About five years ago we critically studied what might constitute an adequate minimal program for any work place. Out of these studies there evolved what we have called the Medical Emergency Plan for Small Work Places. Its provisions, though minimal and few in number, are as follows:

1. A definite and pre-established plan of procedure in case of serious accident or acute illness among employees on the job.
2. An adequate first aid kit, properly located.
3. Personnel properly trained to use the kit.

Spot checks of smaller work places showed that about one in 50 could adequately meet these requirements. Here then was an industrial hygiene problem of first magnitude, to which our entire staff directed considerable thought and effort.

Especially effective were the efforts of our nursing consultants, upon whom fell the responsibility of much of the detailed field work.

We would like to discuss in some detail the three sections of the plan in order better to develop the problems encountered and the methods of solution selected.

Presented at the Twelfth Annual Meeting of the AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS, Chicago, April 24, 1950.

Procedure in Case of Serious Accident or Illness

ALTHOUGH serious accidents and medical emergencies may occur with high frequency in a particular industry or occupation, their actual frequency of occurrence in a small plant population is very low. As a result, when they do occur, confusion, gross mismanagement of the injured, needless delays and outrageous errors in judgment all combined unnecessarily to jeopardize the life and future health of the injured. Numerous such distressing instances have come to the attention of all of us who are concerned about occupational health. Direct interrogation of a large number of small plant operators yielded a composite answer that in case of serious accident they would (a) summon a neighborhood physician, (b) load the injured into an automobile and move him to the nearest hospital, (c) call their insurance carrier, or (d) call the police or fire department. Few of those interviewed realized that the chances of finding the neighborhood physician in his office when needed were remote, that the hospital they had in mind might not be equipped to handle emergency cases of this type, or that in any event it is usually expedient to make appropriate financial arrangements in advance with the hospital management.

In order to solve this phase of the problem we prepared the text for an "In Case of Accident" poster which could be conveniently located near first aid kits and telephones in small plants (Fig. 1). The Detroit Safety Council gave whole hearted cooperation in the printing and

In Case of Accident

CALL IMMEDIATELY:

AMBULANCE: Phone No.____ Name____

HOSPITAL: Phone No.____ Name____

COMPANY DOCTOR: Phone No. (Office)____ (Home)____ Name____ Address____

REPORT ALL INJURIES TO: Day Shift____ Afternoon Shift____ Night Shift____

Revise Two Years From This Date:____

COURTESY OF THE DETROIT INDUSTRIAL SAFETY COUNCIL

Fig. 1.

distribution of these posters (7 in. by 9 in. on yellow cardboard) and have made ample supplies available to us. The enthusiastic acceptance of these cards by employers has been most gratifying.

Adequate First Aid Kits

EVERY one of you who has had occasion to inspect first aid kits in work places is too familiar with their numerous shortcomings to necessitate an elaborate listing here. They range from no supplies at all to miniature pharmacies, dirty and unkempt, to those securely under lock and key, whereabouts of the latter unknown. They have one failing in common, lack of minimal essential components. Extensive study was made of what constitutes an adequate first aid kit for small establishments. Many published lists were examined, and experts in first aid, safety, industrial medicine and industrial surgery were consulted, as were manufacturers and suppliers of first aid kits. It was discovered that a small kit with a few essential supplies was much better than an elaborately stocked kit. Field experience showed that while the essential supplies were rapidly depleted from large kits, the inclination to restock them was lacking because superficial inspection showed an apparently well-stocked kit. Our requirements for the first aid kit, intended to be used in an industrial community, are listed in Fig. 2. Thousands of these kits have been installed in Detroit work places with complete satisfaction. One important feature is the use of pressure dressings for controlled bleeding. Only a small stock of bandaging and treatment materials is provided, because elaborate bandaging and treatment facilities are undesirable in the average small plant. Such treatment is better done in the hospital or the physician's office. Stretcher and splinting equipment is not required because it is available on most ambulance and rescue services. Especially noteworthy is the provision of a sterile gauze or pressure pad to replace the wad of waste, wiping cloths, soiled shirts, dirty towels or old gloves which are usually the only large dressings available in small plants. The low cost of the kit and the availability of its supplies greatly enhances its acceptance and usefulness.

BUREAU OF INDUSTRIAL HYGIENE
DETROIT DEPARTMENT OF HEALTH
FIRST AID KITS FOR SMALL ESTABLISHMENTS

Every plant or establishment, no matter how small, should have certain first aid supplies available for the care of injuries. The kit should not be locked and should be conveniently located and available to anyone who may need to use it. First aid equipment must be kept in a dust-tight, durable case and near hand-washing facilities. It should be the duty of someone in the plant to see that adequate first aid supplies are always on hand.

The first aid kit for a small establishment should contain:

1. Sterile individually wrapped 3 in. x 3 in. gauze pads (6 to 12).
2. Sterile individually wrapped pressure pads at least 6 in. x 6 in. (2). These are to be used for pressure dressings for large bleeding wounds. Sterile gauze one yard square or five yards square will serve the same purpose and may be more easily available.
3. Small ready-made adhesive bandages (package or box).
4. One-inch and two-inch gauze bandage rolls.
5. Burn preparation.
6. Wound antiseptic (e.g. mercresin, metaphen, merthiolate, zephiran, etc.).

Consult your plant physician for specific instructions concerning all medications and treatments.

Most of the commercially available kits contain the above listed items. In addition, the following items may be useful: roll of one-inch adhesive tape, triangular bandages, small covered absorbent cotton dispenser, a tourniquet, scissors, safety pins, paper drinking cups, applicators, small forceps, eye wash solution, sterile eye droppers, vinegar, bicarbonate of soda for burns, aspirin, aromatic spirits of ammonia, stretcher, and, possibly, boards for arm and leg splints, depending on the plant's operations. A ledger or note-book in the first aid kit for recording first aid treatment is recommended.

For advice on special problems in your plant call the Detroit Department of Health, Bureau of Industrial Hygiene, TRinity 2-1540.

Fig. 2.

Personnel Properly Trained to Use the First Aid Kit

THE greatest dilemma in the establishment of our "Detroit Plan for Emergency Care of Injured Workers" has been the provision of properly instructed personnel. Every work place should have at least two workers trained in this activity. The only agency in Detroit which actively gives first aid instruction is the Detroit Chapter of the American Red Cross. Unfortunately, the Standard Red Cross Course is substantially unsatisfactory for the purpose because it is not presented from the occupational point of view. Some sections are unnecessarily long, such as those devoted to bandaging and management of fractures. Others utilize a poor approach such as teaching artificial respiration in association with drowning, a most rare occupational accident, rather than the usual electrocutions and asphyxiations. Other subjects such as snakebite and frostbite are not very pertinent, at least in Detroit industry.

By having a special industrial first aid course some of the following items may be stressed:

1. Frequent consultation with the plant physician.
2. Limitations of first aid.
3. Prevention of accidents.
4. Accident record keeping.
5. Adequate care of minor injuries which if mistreated may cause serious complications. A most notorious example is the use of eye cups, which may cause eye infections.
6. Discouraging over-treatment. Misinformed first aid workers frequently use cathartics, antihistamines and patent medicines.

STATE OF MICHIGAN

DEPARTMENT OF LABOR

THIS CERTIFIES THAT

_____ HAS COMPLETED THE INDUSTRIAL COURSE OF INSTRUCTION IN FIRST AID TO THE INJURED, HELD IN CONJUNCTION WITH

MICHIGAN DEPARTMENT OF LABOR

AND

DETROIT DEPARTMENT OF HEALTH

DATE _____ COMMISSIONER OF LABOR

_____

DIRECTOR INDUSTRIAL HYGIENE BUREAU

(THIS CERTIFICATE EXPIRES FIVE YEARS FROM DATE AND IS RENEWABLE ONLY THROUGH ENROLLMENT AND COMPLETION OF ANOTHER FIRST AID COURSE)

HOLDER'S SIGNATURE _____

ADDRESS _____

Fig. 3.
Front and back of 4 in. x 2½ in. white card

Reference material on such subjects as industrial hygiene, safety and labor legislation may be provided at the time of the course.

The Standard Course is given in eight, two-hour sessions. Extensive consultation with the managements of small work places indicated that four, three-hour sessions which could be given during the first or second portion of a shift would be much more satisfactory if employees were to receive instruction on the employer's time, and experience has demonstrated that such an arrangement would be necessary. Few employees will take a first aid course on their own time, and "after regular shift" instruction would involve overtime expense for the employer.

Extensive conferences were held with the First Aid Instruction Division of the Detroit Chapter of the Red Cross. They in turn appointed a special study committee composed of industrial physicians and surgeons, the Red Cross, the Detroit Department of Health, the Michigan Department of Health, and the Michigan Department of Labor. The Michigan Department of Labor's interest in the problem was stimulated by a recent amendment to the Michigan Labor Law by the Legislature which includes the provision: "The Commissioner of Labor and deputized factory inspectors shall have power to order all improvements herein specified such as .... adequate first aid facilities ...."

As a result of these conferences a special course in Industrial First Aid composed of four three-hour periods of instruction was established, sponsored jointly by the Department of Health and the Michigan Department of Labor, to be taught by the First Aid Instruction Division of the Detroit Chapter of the American Red Cross. Students successfully completing this course were awarded a certificate (Fig. 3) valid for five years, by the Michigan Department of Labor and the Detroit Department of Health. Those students so electing could attend two additional three-hour sessions and receive the Standard Red Cross First Aid Course certificate.

This special course has been given in selected pilot areas in the city. Employers have been given a direct invitation or request to send students to the courses, which have all been conducted during the regular working day in locations near the participating plants. Employers and employees who have taken the course are satisfied. Follow-up visits to the participating plants by our nursing consultants have been productive and gratifying.

Although the instructional phase of the program is in its infancy, there appears to be no important obstacle to its successful prosecution. Admittedly it is an ambitious undertaking which, when stabilized, will require the instruction of some 8000 workers per year. The creation of an adequate force of volunteer instructors and the publication of a textbook appear to be the only remaining problems.

Summary and Comments

THE "Detroit Plan for Emergency Care of the Injured or Acutely Ill Worker" requires that all small workplaces in the City of Detroit must have (1) posted a definite and pre-established plan to be followed in case of serious accident or acute illness, (2) an adequate first aid kit properly located, and (3) at least two persons on each shift properly trained to render emergency aid.

Some critics of the plan have pointed out that it is applicable only in large industrial cities. This is probably true for certain of its features. Other critics condemn the practice of establishing minimal requirements because it tends to hinder the development of more adequate and desirable health services. The writers feel that these fears are groundless. Experience has shown that minimal standards are usually the foundations upon which progressive employers build their employee health structure. Everything must have its beginning. The excellent acceptance of the Detroit Plan in our city can stimulate nothing but optimism. But even if one is completely pessimistic, it should be emphasized that previous strictly educational and promotional efforts have not resulted in the provision of any concrete service for the care of injured workers in our myriad small plants. The minimal requirements provide a substantial foundation upon which our industrial nursing consultants, industrial hygienists, part-time nurses and physicians who render service to industry can build a really adequate program.

Who's Who in Industrial Medicine

"write me as one who loves his fellow men"

INDUSTRIAL medicine in the United States is generally considered as having certain of its roots in the surgery of trauma. If that is granted, then the steel industry of Pennsylvania was the place of its beginning. The first plant surgeon of whom there is record was Dr. William J. Middleton, at Pennsylvania Steel Co., Steelton, in 1884. He was succeeded by Dr. John F. Culp in 1888. Dr. W. B. Lowman became chief surgeon for Cambria Iron Co., at Johnstown, in 1886, continuing until 1904. In that year Dr. A. W. Colcord was appointed chief surgeon at the Clairton plant of Carnegie Steel; Cambria Steel opened the first and oldest industrial hospital at Johnstown, and Lackawanna Steel completed a 30-bed hospital at Lackawanna. Bethlehem Steel established a hospital at its San Francisco shipyards in 1907. Dr. William O'Neill Sherman was named chief surgeon for Carnegie Steel in 1909. Dr. E. R. Whipple followed Dr. Culp at Pennsylvania Steel in 1911. The emphasis was on surgery. But that was due for a change—and a surgeon was to change it . . . .

LOYAL A. SHOUDY, M.D., F.A.C.S.

In 1912, on DR. LOYAL SHOUDY'S service at the German (now Lankenau) Hospital in Philadelphia, a young metallurgist from Bethlehem posed a problem. He was ailing, without symptoms. DR. SHOUDY got interested in him and, in turn, got him interested in others in the hospital who were really sick. After a few such contacts the young man suddenly announced: "There's nothing wrong with me. I'm going home!" A year or so later, back at Bethlehem Steel, this same young man learned that the safety department wanted the company to employ a doctor. He offered a suggestion, and shortly the surgeon through whom he had been given an important lesson in life was asked to come up and look the place over. DR. SHOUDY went—with no enthusiasm for going, and, after he arrived, still less for staying. He did, however, agree to try it six months. He's been there 36 years.

THE STORY of those years goes back for its beginning to 1866 when John Shoudy, mustered out of a Union regiment in Illinois, joined a wagon train for the northwest. He stopped at Seattle; there he met and married Ellen Stewart, who, with her brother, had come, also by wagon, from Indiana. After a few years he "back-trailed" over the Cascades to a broad valley in central Washington where he founded the town of Ellensburg, named for his wife. He established his home there, and in 1870 set up a general store which soon was the trading center of the region. Community-minded, he built a flour mill and a lighting plant, started a bank, and brought in the telephone. John's ventures prospered, but, content with doing for others rather than having for himself, he never became a rich man. Ellen was of the same temperament. There was no doctor in the area, and so at birth and bedside she was the frontier substitute. Meanwhile she was raising her family. Her sixth child was born in 1880. Moved by his own success with the simple virtues, John said he wanted his boy to be "ever loyal." Thus the name—in this lad "father of the man." Boyhood was spent in the growing town, amid the home atmosphere—taken for granted and a thousand times proved—that the SHOUDYS were people to turn to for help in sickness or trouble. Horses were a part of life in those days, and a small boy could drive, and often ride, almost as soon as he could walk. When the youngster was 10 the locality had its first doctor, and the two became great friends, the doctor—himself a lover of fine horses—frequently taking the lad as driver or "for the ride" when he made his rounds. Once when LOYAL was 12 he had to help by holding the ether cone during a kitchen table appendectomy. About this time he began to feel that he, too, "must be a doctor." He attended the public school, the Presbyterian Academy, and the town's new high school—with three summers, all of his vacations and most of his evenings given over to work in the local drug store. Finishing high school in 1898, he was a member of the second class to graduate. The next two years were put in at a local teachers' college. A medical education seemed far away, and the young man felt that he ought to be prepared for something else if his first choice proved impossible. In 1900 he went to the University of Washington at Seattle, interested almost equally in teaching

and civil engineering. After some courses in both, however, he turned his major attention to chemistry. He was active in college affairs. Weighing 140, he played on the varsity football team, the lightest man ever to receive his letter in football at the university. He was captain and trainer of the school's first basketball team, was a member of the *Tyee* staff, had a role in the junior class play, and was an ardent debater. After graduating, A.B., in 1904, he did a post-graduate year in chemistry. Following this he was engaged during the summer on a State land survey when a Seattle cousin offered to start him on his medical studies. He went East to the University of Pennsylvania Medical School, enrolling in 1905. After the first year he had to work his way; one of his activities was running a boarding house for his meals. Graduating M.D. in 1909, he began a three-year internship at the German (Lankenau) Hospital in Philadelphia. His preceptor was Dr. John B. Deaver, who ranked with Ochsner, Murphy, and the Mayos, and under whom he got a remarkable training in surgery. In 1913 DR. SHOUDY became physician-in-charge at the Mary Drexel Children's Hospital. He was there, making ready to set up his own practice, when the invitation to Bethlehem came along.

THE PERSPECTIVE on this young man's early days at Bethlehem is aided by a look at what he took with him when he went there. He was 34, well educated, finely trained, serious minded, eager to get started on a career as an orthopedic surgeon. This was just what the safety people wanted. Their need was not a matter of response to workmen's compensation requirements; the first Pennsylvania statute wasn't enacted until two years later. It was the necessity of moving safety matters past the dead center on which they seemed stalled. A good surgeon could do it. This one had all the qualifications. But he had also a heritage of helpfulness, an up-bringing in a home atmosphere of giving, a deeply-rooted conviction that service to a fellow human doesn't end with an act but continues with an interest. He had the inspiring examples of his mother and father, merged in him in a pattern of life as much his as their blood. With this background, the limitations of industrial surgery as he began to encounter them roused him to resentment. The repair of injury, to which it was confined, may have been surgical enough, but it fell far short of being human enough. Then, too, the inter-office relations within the company were unsatisfactory, the remuneration was inconsequential, the local profession showed few signs of friendly cooperation. As the six-month's trial period drew to its end, the whole situation seemed hopeless. Before leaving it, however, he sought out Dr. W. E. Estes, head of the town's St. Luke's Hospital, and asked his advice. This kindly elder confirmed the young man's tenets: *first* duty to the employee, *second* duty to the company. Then he said: "Of course you'll never do either if you're going to be thin-skinned." The young man went back to headquarters, hunted up top management, asked for a medical and surgical set-up that would enable him to do what he believed ought to be done for the employees, for authority to do it, and for a rate of remuneration commensurate with its doing. To his amazement he got all he asked for. As he left, it occurred to him that maybe the executives deserved their titles; maybe they had been thinking along the same lines and were testing him out during the six months to see if he was their man. Big business does such things. At any rate, it was up to him; henceforth LOYAL SHOUDY, M.D., Chief Surgeon for Bethlehem Steel Company, was on his own.

POSSIBLY DR. SHOUDY didn't realize the full extent to which he was "on his own" until after the flu epidemic of 1918. His work had been limited to the Bethlehem plant, but that was enough to occupy every moment of his time and all of his abundant energy, particularly in the war years 1917-18. Then, the summer before the Armistice, the devastating sickness blanketed the town and he, with every other doctor in the area, rallied to superhuman and exhausting efforts. In the midst of the aftermath, Bethlehem's President, EUGENE G. GRACE, piled the Pelion of new responsibilities on the Ossa of his fatigue by appointing him Chief of Medical Service for the entire Bethlehem organization. MR. GRACE added: "You don't report to anybody." For more than 30 years that has been literally true. And it is today. He doesn't report to anybody. Yet, in a sense, it isn't true, for he has to report to LOYAL SHOUDY, and his inborn and finely developed sense of personal responsibility is much more exacting upon him than any outside influence could be. The high standards to which he holds himself and his work are probably the basis of a personal quality that may be described as "impatient meticulousness." He demands perfection in whatever he does and will go to infinite pains to get it. An example is his plant hospital at Bethlehem. Small in area, exquisite in appointments, complete in every detail of equipment, utility and convenience, startling in its well-thought-out uses of space, this little hospital is altogether a thing of beauty. Characteristic of the man is the fact that he drew the plans himself. The draftsmanship he learned in his civil engineering at college wasn't wasted. Another example—one of the many that are so eloquent of his demands upon himself in surgical matters—is a hand crushed almost to pulp in a plant accident but restored to full use. As its owner flexed his fingers easily he remarked: "Doc put in many long hours fixing that up." Long hours! Infinite pains! He was a good surgeon. There are many who consider him a great surgeon. Fractures and hand surgery were his main interests, and he was expert in both.

A confrere in surgery says of him: "For many years he was one of the outstanding hand surgeons in the East." Long a Fellow of the American College of Surgeons, he has been a member of its Board on Industrial Medicine and Traumatic Surgery (now the A.C.S. Committee on Trauma) continuously since 1929. In the preface to the Sixth Edition of his famous text, "Infections of the Hand" (Lea & Febiger, 1935), ALLEN B. KANAVEL says: "DRS. HARRY E. MOCK, FREDERICK A. BEASLEY and LOYAL A. SHOUDY, because of their wide experience in traumatic surgery, have been of great assistance in the preparation of the chapter dealing with the prophylactic treatment of wounds and the care of employees in industry." DR. SHOUDY maintained an operating schedule at his Bethlehem hospital until 1944. But he was so notably much more than a surgeon.

AS EARLY as 1920 the principles of industrial medicine were clearly established: *medical and surgical care*, following industrial injury or disease; *prevention*, by control of the work environment. Application of these principles has been largely a matter of adapting and elaborating. There are numerous instances where they have been carried to the highest power of usefulness—medical departments that rank with outstanding clinics in diagnosis and treatment, while transcending clinic possibilities in the area of prevention. So all-embracing are these developments that nowadays nothing is wholly an innovation; each new refinement seems to discover its precedent. But who set the precedent? Who, for example, was the first to put urinalysis on the examination form? Or blood counts? Or serology? The historian, tracing names and dates, goes back and back, reluctant to designate one first, lest someone else emerge as antecedent. The biographer, however, hasn't this handicap. He encounters the phenomenon that there are many firsts, in that the concept was original with the man at the moment of meeting his opportunity. This phenomenon is typical of the pioneers—so much so as to make dates unimportant. It was the quality of their response to the opportunity rather than the time of it that made them pioneers—their possession of the characteristics of mind and heart that enabled them instantly to understand, and forthwith to exemplify, the philosophy of industrial medicine.

FOR LOYAL SHOUDY this philosophy had only one meaning: "first duty to the employee." His response to this duty has long been one of the finest and most complete in all of industry. It is expressed now in a veritable empire of industrial medicine, a comprehensive medical, surgical and hygiene service for all of the company's far-flung operations: 16 steel and manufacturing plants in eight states; 11 fabricating works in four states; six shipbuilding yards in three Atlantic states and California; 10 ship repair yards in five states; district and other offices in 43 cities; a number of mining and quarrying operations; a plant in Cuba; ore production facilities in Chili and Venezuela. The medical department has six full-time physicians at Bethlehem and 23 full-time and 21 part-time elsewhere; 162 nurses; numerous technicians. There is also the recently-added industrial hygiene staff, under ALLEN D. BRANDT, SC.D., who heads the first industrial hygiene department and the only complete industrial hygiene laboratory in the steel industry.

The progress of DR. SHOUDY'S medical department from the small surgical intentions of his first six months at Bethlehem to the all-inclusive coverage of today is a remarkable story. Its nearly four decades embrace the full range of employer medical services from nothing to everything. Parallel with developments elsewhere during the same years, it has its own claim to distinction in that it took place in steel. Fortunately the "hours and times" of its happenings, the details of its events, are to be a matter of record; DR. SHOUDY is writing their history.

This history will be an important addition to the essential literature of industrial medicine, doubly significant in that it will be a history written by the man who made it. But it will evolve as severely objective; it is its author's nature to keep it so. His modesty may yield a little in concessions to those things in which he and his department were pioneers, precedent setters, but he will make sure that it is as little as may establish the fact; the credit will be left implicit in the event. LOYAL SHOUDY, however, belongs not to himself. He belongs to industrial medicine, the whole world of it. Every phase and facet of its universality—preventive, curative, administrative, humanitarian—has responded somewhere to his restless ability or his great heart. The essayist, therefore, who would attempt even the bare outline of industrial medicine's claims upon him cannot be bound by any rules of reticence.

OF THE year 1914, DR. SHOUDY says: "It was at this time that I entered the field of industrial medicine." This was an important year for him. The field was smaller then, just beginning to sense its wide vistas of prevention. Each new medical director was a pioneer perforce; methods, procedures, forms, techniques were a matter of original development, rather than of adaptation. Yet in 1914, when Magnus Alexander, head of the National Conference Board, turned to the industrial physicians for suggestions and information not available elsewhere, he found DR. SHOUDY'S program almost the model for the recommendations later published by the Conference Board of Physicians in Industry which he organized. When DR. SHOUDY asked Bethlehem's top management for "a medical and surgical set-up that would enable him to do what he believed ought to be done for the employees" he had al-

ready well formulated his program in his mind.

It was also in 1914 that DR. SHOUDY had his first experience with the effects of heat on the worker. "About 5:00 o'clock one afternoon of a hot and sultry day, the men from the open hearth carried into our small clinic a man with intense cramps in his arms, legs and abdomen. They gave the story that the man had been working around the hot furnace all day and had been drinking too much cold water.... From then to 1932, we were constantly looking for a way to prevent heat exhaustion and heat cramps in those departments where heat is a hazard. Watching the habits of the men we noted that in the crucible where they were permitted to leave the job, they crossed the street to get a glass of beer. They put salt in the beer and returned with pretzels. This was one of the hottest places, but the incidents of heat exhaustion were less than in others. In another department, they insisted on having at their disposal Jamaica ginger, and in another a barrel of fresh water into which they poured rolled oats. Heat exhaustion was not marked from this department. In one plant, they were accustomed to eating gum drops and, in another, peppermint lozenges. In still another we noted that one was eating salted peanuts, and we learned that this custom had been handed down for a number of years, which was the reason for no heat cramps from that furnace.... The beer with salt, the gum drops, the peppermint candy, the oatmeal water from which they secured potassium salts, the salted peanuts, all led us to believe that there was some preventive measure in salt and sugar...."* They found it, and evolved the salt tablet. The "they" includes DR. ANNA M. BAETJER, of Johns Hopkins University. DR. SHOUDY'S intensive study and research on heat and muscular work were done with her help, and he never mentions the subject or answers questions about it without insisting that she was as much responsible for whatever they were able to accomplish as he was. Their study brought them an international reputation professionally, much enhanced in subsequent years by other achievements on the part of both. The standard salt tablet now has seven grains of salt and three of glucose. It is as ubiquitous in hot work places as the heat itself. Never may its sweaty swallower be expected to think of SHOUDY and BAETJER. But who, as he gets his needed insulin, remembers Banting and Best? It is a part of life and progress that many a pioneer's achievement has its only—though perhaps its greatest—monument in the commonplace.

IT WAS in 1914, too, that DR. SHOUDY learned of the Chicago plan inspired by HARRY MOCK and ANDREW HARVEY to organize the medical men identifiable as industrial physicians and surgeons into an association of their own. There weren't many of them; no more than a few score were engaged full time, and for most of those their situations had evolved from circumstances rather than choice. But they were strong men, thorough individualists. They had to be. Inside their plants their every move took courage, for always ahead was the challenge, the "show me," of both management and employees; outside, it invited criticism—industrial medicine "was a field of anathema." Professionally, they were lonely men. The move to bring them together met quick response. DR. SHOUDY aligned himself with it and became one of the organizing group of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS. This had interesting consequences for both him and the Association. In a manner of speaking, it adopted him, and he adopted it. Immediately he was plunged into its work, as committee chairman, director, officer, adviser, and general helper in whatever capacity he could be useful. He was President, 1923-'25, and again, 1946-'47, and in-between was almost continuously a member of the Board. Particularly was he interested in the Annual Meetings. Those who stood with him in the far-gone days well remember that some of the early ones would not have been possible without his drive and insistence and wise counsel—and, on several occasions, his personal payment of the expense of holding them. He loved the Association. His affection for it was as rich in ideals and vision as if he were planning the future of a son. From the first, he saw it the great force in the development of industrial medicine that it now is, the strong group which would stand for the principles and exemplify the practice of industrial medicine in its inevitable manifestations. He felt almost that it was his responsibility to continue active, and insistent, and determined until it had become all that he wanted it to be. And so, for more than 30 years, he was its counselor and guide, and whatever else its needs indicated, with no dividing line between what it wanted him to do and what he thought ought to be done. In 1947 he concluded that its future was safe in the hands of the younger men, and the Buffalo meeting was the occasion of his valedictory. He was President, and the banquet program had scheduled a "President's Address." When that was next in order, he said he hadn't wanted to do any talking, but since—against his wishes and over his protests—they'd put him on anyway, he'd do it. He consulted the little cards in his hand, and talked for 32 minutes. His "address" was no oration. Informal, unstudied, impromptu, it lacked the rounded periods of a speech, and a deal of editing would hardly make it a paper. But, as it unfolded, year by year, the long roll of honored names and the brilliant panorama of events in industrial medicine in which so many of those present had played important parts it was heard in almost nostalgic silence. History was being relived—32 years of

*From "Heat and Muscular Work," by LOYAL A. SHOUDY, M.D., F.A.C.S., and ANNA M. BAETJER, Sc.D., in *Surg., Gynec. & Obst.*, 62:475, February 15, 1936.

history; and, such the eloquence of remembrance, none begrudged the rate of the recital, nor the halting, affectionate, nearly tearful, recollections of great men and stirring times. Love spoke in every word—love of his work, his people, his friends; love of things honest, and right, and true; the kind of love that lives only in a great heart.

LOYAL SHOUDY has done much for the Association. But it has done much for him. Among other things, it brought him into contact with men of his own quality, many of whom became his devoted friends. One of them was OTTO GEIER, of Cincinnati, who, as early as 1917, put his own vision of the future of industrial medicine into pungent expression: "It doesn't count for much if surgeons are employed in a plant to care for the injured. The surgeon is in just the same relation to a business and the employees as is the electrical repairman who replaces fuses and looks after short-circuits. What is needed is a doctor—a combination general repair and safety engineer—to look after the human machinery, to study stresses and strains on it, to give warning of a probable breakdown, to advise easing up on the load until the human mechanism has been readjusted, to do the hundred and one things that make for comfort of mind and body."* This was the philosophy of prevention. DR. SHOUDY said it in two words: "human engineering"; he believes he was the first to use the phrase. Other men had the vision of prevention, but SHOUDY and GEIER began to give it voice, became its missionaries, talked it at meetings of every kind. They felt it their duty to preach prevention, and for many years they did just that—to physicians, managements, community groups, Rotarians, safety and industrial relations people—to everyone who would listen. The concept of prevention, of course, was to be an inevitable result of growth, and all in the field have long since become converts to it, but no harm will be done to the facts if SHOUDY and GEIER are given a bit of credit for having accelerated the conversion. They earned it, not only in what they said, but also, and equally, in what they did—SHOUDY at Bethlehem Steel, GEIER at Cincinnati Milling Machine.

But what DR. SHOUDY has done at Bethlehem is too deeply woven into the whole fabric of industrial medical practice to sustain repetition here. Suffice it to note that from the beginning he has spent money on all and whatever the diagnostic, curative, therapeutic and preventive needs of his people indicated. The company policy —which is *his* policy—has always been that compensation time limits are nothing; the man's needs, everything; weeks, months, years are alike if the end result is restoration. Never have his acts been questioned; never has he been even cautioned on costs. Unusual as such a situation is in industrial medical history, even more unusual, and remarkable, is the degree to which his policies, his plans, and his ways of carrying them out were complete at the time he started them. Possibly this was because he'd had his six months' "trial period" to think them over. By example at home, as well as by exhortation elsewhere, he has done certainly as much as, and in many respects more than, any other individual to shift the emphasis in industrial medicine from surgery to prevention. He did it early, and he did it well—withal he was a surgeon.

Although he has made hundreds of speeches on industrial medical and "human engineering" subjects, he hasn't written many articles.* These usually were his response to time, place and purpose—he had something to say apropos of the need to say it. His style is simple and logical, characteristic of the man.

In his crusading for prevention, DR. SHOUDY can be acclaimed for several "firsts." These had their beginnings in 1914. One was in connection with safety. Interested in the purposes and plans of the National Safety Council, then but a year old, he allied himself with it and promptly urged that safety be taught in the schools. His initial speech on this subject was given at St. Louis in 1917. Later he suggested that safety be taught to school teachers. He was a Director of the National Safety Council, 1921-'24. Another is in the matter of first aid. This may not have been exactly a "first," but it was, at least, an early—and most timely—ordering of the subject into both manual and practical form. His "Outline of First Aid" has been widely used as a basis for employee education. By 1918 he had more than 70 first aid teams of seven men each among Bethlehem employees, their periodical competitions for first prizes of $100 per man keeping them at high effectiveness. It was largely as the result of his insistence that the Red Cross, the Bureau of Mines, the National Safety Council, the Gas and Electric Association and others interested finally got together on a standardized method of teaching first aid.

IN THE staccato of the "Who's Who" publications, DR. SHOUDY'S biography is not replete with appointments, memberships, affiliations. Each mention, however, has a story behind it.

*From "The Human Potential in Industry," by OTTO P. GEIER, M.D., presented at the Spring Meeting of The American Society of Mechanical Engineers, Cincinnati, Ohio, May 21-24, 1917.

*Some of Dr. Shoudy's major articles are:

"Medical Supervision of Workmen and Its Relation to the Prevention of Industrial Accidents." *J. Sociologie Med.*, 18:1, February, 1917.

"The Relation of the Doctor to the Steel Plant." American Iron and Steel Institute, May 26, 1922.

"Sickness in the Steel Industry." *The Hahnemanian Monthly*, June, 1931.

"Comments on End Results of Fractures in Industry." Interstate Post-Graduate Medical Association, 1931.

"First Aid and Emergency Organization in Industry—Equipment, Training of Personnel, Transportation of Injured, and Hospitalization." A.M.A. Council on Industrial Health, January 17, 1944.

"Editorial: "Humanics of Industry." *Surgery*, 1947.

"Bethlehem Steel Promotes Employees' Health and Safety." *Steel*, February 18, 1946.

Thus his chairmanship of the Committee on Industrial Health of the American Iron and Steel Institute. He has been its Chairman since the Committee was organized in 1945. Back in the twenties he was given a place on one of the Institute programs, the second doctor to be so honored. William O'Neill Sherman had been the first; he spoke on surgical problems. DR. SHOUDY'S subject was his favorite, "human engineering," and his remarks were well received. The occasion was made memorable by the fact that, following his talk, he came off best in an argument with Judge Elbert Gary. And thus the notation: "President, Bethlehem Area Boy Scouts of America." He was President 10 years. He is Honorary President now. Each year at his Bethlehem plant hospital he gave every Scout a complete physical examination prior to Summer Camp. Most of the Scouts were the sons of Bethlehem employees. If a boy had something that needed attention, he was told what to do. One lad with a polio arm was guided to recovery; he distinguished himself as a pitcher in Lehigh varsity baseball. Another with a heart condition was led through it, went to college, and later saw service in World War II. DR. SHOUDY used to take his Scout Troops on vacations to historical places, Valley Forge, Gettysburg, Mt. Vernon. He paid the bills.

DR. SHOUDY never married. His "family," however, includes the many hundreds to whom, in one way or another, he has been as a foster parent. He long ago lost count of the number of young men he has helped through college, some to the full extent of all that the four years involved. During World War II he kept up a regular correspondence with more than 150 members of his fraternity, Phi Gamma Delta, who were in the service in all parts of the world. The letters he received from these men and/or their parents constitute a human document rare and beautiful. He and his plant hospital have been always at the service of the local athletic teams, high school and college (Lehigh). Never has he lost his interest and enthusiasm for his university, and particularly its racing crews. The following are some 1943 comments: "The story is told how, shortly after the arrival of the crews on the Hudson in 1923, when Washington won the first of its many victories at Poughkeepsie, a kindly, smiling, blue-eyed gentleman appeared, introduced himself as a former Washington student now living in Bethlehem, Pennsylvania, and asked if the crew had a doctor or trainer along. When told they hadn't, he said, 'Well, in that case I'll try not to be of any bother, but I'll just stay around as this is my annual vacation week.' And so the Chief of the Medical Service of the Bethlehem Steel Company became a trainer for his beloved Alma Mater, a service he performed for some years. And for 20 years since, next to winning itself, the highlight of every Washington oarsman's trip to the Hudson has been DR. SHOUDY'S dinner and theater party in New York for the squad."* "DOC SHOUDY'S baby has been Washington rowing. The kindly, sentimental old grad is chairman of the entertainment committee every year when the crews go East. He foots the bill for the annual banquet at Poughkeepsie; his theater parties, at New York prices, have cost him many hundreds of dollars; and oarsmen for the past several generations are still wearing SHOUDY neckties. The school named a new shell after its No. 1 rowing fan. This was a great idea, for more than one reason .... when the Husky varsity showed signs of slipping on the Hudson during the 1940 race, the cox just screamed: 'We're riding in his boat boys; let's win this one for Doc.' They not only won that one for Doc, but they beat California twice with the *'Loyal Shoudy,'* won again at Poughkeepsie in '41, and then the freshman won with the same shell last year. So the *'Shoudy'* has never lost a race!"** At one of the theater parties when there were no tickets for the current Ziegfeld show to be had at any price, DR. SHOUDY hunted up Flo himself, with the result that the 40 young men who had come "all the way from Seattle to see Rio Rita" saw it from close-up seats. DR. SHOUDY seldom missed a race in which his boys were entered. The Washington "Huskies" made their usual sweep clean at Marietta, Ohio, last month (June, 1950) but he had to hear it from the radio beside his bed at St. Luke's Hospital, Bethlehem, where he lies, very ill ....

IN 1943 the University of Washington conferred upon him the degree "Alumnus Summa Laude Dignatus." Concurrently, the employees at Bethlehem Steel gave him a signed scroll, expressing their sincere pleasure in, and "hearty approval" of, the honor so bestowed. DR. SHOUDY can't say which of the two he cherishes most. Objectively, the two together symbolize the difficulty of separating his career as physician and surgeon from his career as a giver, a personal humanitarian. The two are inextricably mingled in the life of a great and good man—the composite of talented hands, a brilliant mind, and an understanding heart, all and always at the service of his fellow humans. It is fitting and proper that there hangs on the wall of his study a little framed certificate of membership in the "Order of Abou Ben Adhem." His career as physician and surgeon is one of the solid facts of industrial medicine—carved in the hard rock of its cornerstone. But to "pluck out the heart of his mystery" as a disciple of service is beyond the gifts of even the most biased biographer. Let it, therefore, be expressed, as best it may, in the love and affection which pour out to him from the hearts of the thousands all over the land who know how capable, how kindly, how *Loyal*, he is—a love and affection of which it is hoped this far-from-adequate appraisal of this really great man may be received as a small token.

**The Washington Alumnus*, January, 1943.

**ROYAL BROUGHAM, in *Seattle Post-Intelligencer*, June 10, 1943.

ASSOCIATION NEWS

Our Honored Dead

DURING the sessions of the Thirty-Fifth Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, the Officers and Board of Directors of that organization in formal session were sorrowfully apprised of the passage from this earth of three of its greatly beloved and distinguished Fellows during the previous 12 months. These three were: DR. LLOYD NOLAND; DR. GRANT PALMER PENNOYER; DR. CLARENCE OLDS SAPPINGTON.

Over long periods of years, but varying for each individual, these esteemed physicians had been identified with the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, participating both in official activities and in friendly intercourse .... always contributing from their wealth of scientific and personal experience. With awareness of the loss sustained by the Association, its governing body, in affectionate memory, directed that suitable records be prepared as a permanent portion of the archives for the Association and that appropriate portions of these archives be furnished to families of these well remembered Fellows as a token of the Association's sharing in this great loss to these families, to the specialty of industrial medicine, to the medical profession in its entirety, and to the nation.

Lloyd Noland, M.D., F.A.C.S.

AT "ROCKLANDS" near Gordonsville, Virginia, on July 25, 1880, LLOYD NOLAND was born, destined to become notable in the world of industrial medicine and surgery. A happy childhood was spent at "Burrland," his father's ancestral home, near Middleburg, Virginia. That happy childhood gave way to equally happy years as a student, culminating in his graduation as a Doctor of Medicine in 1903, from what is now the Medical College of the University of Maryland. DR. NOLAND promptly attracted scientific attention as a member of GENERAL WILLIAM CRAWFORD GORGAS' staff, sharing in the building of the Panama Canal. There, during his service as Chief Surgeon at the Colon Hospital, he found two of his life-long friends, DR. GROESBECK WALSH and DR. OSCAR TROJE, long to be associated with him in industrial medical pursuits. There it was he was associated with DR. C. H. KIBBEY, the Sanitarian. Equally important, during the days of the Canal project, he found the charming MARGARET GILLICK, first as a hospital associate, then as one desperately ill with yellow fever, but shortly his wife.

In turn, LLOYD NOLAND was discovered by GEORGE GORDON CRAWFORD, President of the Tennessee Coal, Iron & Railroad Company of Birmingham, Alabama. In 1913, DR. NOLAND became its Medical Director. However great that steel empire may have been, there was then no empire of medical achievement. Then DR. NOLAND, with his associates, and with headquarters in Fairfield, Alabama, became the creator of medical activities equal in accomplishments to the company's commercial enterprises and expansions. This empire-making in sanitation, in surgery, in hospital building, in industrial creation, was interrupted in 1916 when the Rockefeller Institute insistently demanded that DR. NOLAND, along with DR. WILLIAM SHERMAN, of Pittsburgh, be sent to France to study the methods of DR. ALEXIS CARREL in order that this country might be better prepared surgically for a war already then regarded as inevitable. This tour of duty paved the way for the construction of DR. NOLAND'S hospital in Fairfield, Alabama. This was called the Employees' Hospital of the Tennessee Coal, Iron & Railroad Company. Actually, it was DR. NOLAND'S hospital. Here was the focus of the saga of industrial medicine in Alabama. The rest is history.

LLOYD NOLAND, during his many years in Alabama, touched every facet of medicine .... a president of the Alabama Medical Society; a member of the State Board of Health; a consultant to hospitals other than his own, and a teacher. By no means was the NOLAND influence merely state-wide. He was one of the founding group of the American Board of Surgery; a president of the Southern Surgical Association; a member of the Southeastern Surgical Congress, and of the American Association for the Surgery of Trauma. Long a member of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, he became a Fellow in 1938. Always the medical statesman, he was, for a period, a member of the Judicial Council of the American Medical Association and for many years, one of Alabama's spokesmen in the affairs of that Association. LLOYD NOLAND reflected the highest type constructive Southern gentleman.

DR. NOLAND died November 27, 1949, but for generations to come will be revered as one of the South's contributions to the nation's medicine at its best. Tangible proof of all that is here recorded, and more, springs from the re-dedication on April 22, 1950, of the Employees' Hospital of the Tennessee Coal, Iron & Railroad Company in Fairfield, as the "NOLAND HOSPITAL," founded by him 30 years earlier but always dedicated to the medical, surgical, sanitary and dental needs of that company's more than 30,000 employees and their families.

Grant Palmer Pennoyer, M.D., F.A.C.S.

MISSING from the ranks of industrial physicians and surgeons at the time of the Thirty-Fifth Annual Sessions, was DR. GRANT P. PENNOYER who departed from the earth on April 11, 1950, just prior to these meetings. His highly useful life was distinctly identified with activities in the Atlantic Seaboard States. This is well borne out in his formal biographical record now introduced: Born, East Orange, New Jersey, November 11, 1894. A.B. Harvard College, 1915; A.M. Harvard Graduate School, 1916; M.D. Harvard, 1919. Married Hildred Thompson, 1922. Associate in Surgery, Columbia University. Associate Attending Surgeon, Roosevelt Hospital. Attending Surgeon, William Booth Memorial and Goldwater Memorial Hospitals. American Board of Surgery, Diplomate. New York Surgical Society; Surgical Section, New York Academy of Medicine. Industrial Affiliation, Armour & Company and New York Division of Armour & Company, since 1925, as Medical Director and Chief

Surgeon. Member A.A.I.P.&S., 1937. Fellow A.A.I.P.&S., since 1941. Fellow New York Academy of Medicine. President, Secretary, Vice-President, Roosevelt Alumni Association. President, Vice-President, Secretary, Harvard Medical Society of New York.

In the medical profession, both industrial and general, DR. PENNOYER was widely recognized for his surgical skill. Apart from surgery, DR. PENNOYER devoted much of his skill and scientific imagination to studies within the field of the cardiovascular diseases. His masterful publications in medical journals attest his achievements. Every praiseworthy member of any profession owes a debt to the pofession of his choice. DR. PENNOYER paid this debt and in undeniable degree, through many scientific contributions, industrial medicine long will profit from its associations with DR. PENNOYER.

In the field of citizenship, DR. PENNOYER was active in and devoted to the affairs of Harvard University, his alma mater. Locally in New York, state-wide and nationally, Harvard alumni and, notably, medical alumni always were close to his heart.

Clarence Olds Sappington, M.D., Dr. P.H.

JUST as Benjamin Franklin widely has been accepted as the first civilized American, so the late CLARENCE O. SAPPINGTON may be acclaimed as the first formally trained physician in the arts and techniques of industrial hygiene. Other physicians before and after him may have come to possess an equal knowledge within the requirements of industrial hygiene, but he was the first and perhaps still the sole physician to achieve the public health doctorate in industrial hygiene. This award was made by Harvard University in 1924. This enviable mark of distinction was never flaunted in vain glory by DR. SAPPINGTON. Instead, in deep consecration, in his inner personal life this became a quiet flame within the ark of the temple over which he presided. In invisible manner this professional uniqueness entered into every activity. It influenced his writings, his editorial work, his addresses, his court appearances, his personal demeanor. Here was the essence of his professional character. This, however, is but one item in his extensive biographical vita now presented: Born, Kansas City, Missouri, September 29, 1889. A.B., Whitman College, Walla Walla, 1911; M.D., Stanford Medical School, 1913; Dr P H, Harvard School of Public Health, 1924. Married Bertha Adrienne Radovich, 1920. Appointments: Stanford University Outpatients Department—Chief of Women's Clinic, 1919-1920; Special Lecturer in Personal Hygiene—Stanford University, 1923; Special Lecturer on Industrial Hygiene—University of California, 1923; Special Lecturer on Industrial Hygiene—Stanford University Medical School, 1924-1928; Acting Medical Adviser of Men—Stanford University, 1926. Specialized Practice: Industrial Hygiene, Oakland, 1924-1928. Pacific Coast Shipbuilding Company, Bay Point, Chief Surgeon, 1919. Montgomery Ward Company, Oakland, Medical Director, 1924-1928; National Safety Council, Chicago, Director, Division of Industrial Health, 1928-1932. Memberships: American Medical Association; American Association for the Advancement of Science; American Public Health Association; California State Medical Association; The Ramazzini Society. Member, A.A.I.P.&S., 1929; Fellow, A.A.I.P.&S., 1937; Director A.A.I.P.&S., 1949. U.S.P.H.S.—Assistant Chief Tuberculosis Division, Twelfth District Assistant Surgeon, 1920-1922. Recipient of the first WILLLIAM S. KNUDSEN Award, 1938-39. Editor of INDUSTRIAL MEDICINE AND SURGERY. Author of many scientific books and numerous scientific brochures. Member of the Chicago Businessmen's Symphony Orchestra.

In the courtly manners of past generations, it was a mark of esteem to designate an outstanding personage as being a "Man of Parts." In a just sense, DR. SAPPINGTON might have been so designated. Never was he a "one-idea man" or a "one-speech man." Year by year he was a part of everything about him, in and out of medicine. It may be believed that to many almost solely he was a musician; to others he was foremostly an author, as identified by his book publications; in far places, he was perhaps best known as an editor; in legal circles he was notably associated with medicolegal testimony of impeccable quality.

Among his associates in the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, and many other scientific groups, including the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, the American Medical Association, the Industrial Hygiene Foundation and The Ramazzini Society, he was all things to all associates. Above all, he was the hearty, lusty, tireless, cooperative friend.

Industrial medicine and hygiene now enjoys a status that did not exist at the time DR. SAPPINGTON entered the field. In no small measure but never precisely measurable, DR. SAPPINGTON shared in its growth and expansion. His influence reached every industrial medical establishment in the nation. The future of industrial medicine is prospectively filled with mighty growth and sturdiness. That future will still in part represent the imperishable imprint of the contributions of DR. CLARENCE OLDS SAPPINGTON, who ended his distinguished earthly career November 6, 1949.

THESE records of esteem and affection, in sorrow were conceived during the formal directorate sessions at the Thirty-Fifth Annual Conference in Chicago and formally approved by the Officers and Directors at the Directors' Board Session in Detroit, June 18, 1950.

—EDWARD C. HOLMBLAD, M.D.

Dr. Schofield's Report

I AM REPORTING at this time on my stewardship as the Association representative at Industrial Congresses in Europe which were held during the summer and fall of 1949. It afforded me a great deal of pleasure and it was indeed a privilege to have been delegated to meet with these several groups of medical men and surgeons. I observed in many industries their progress of safety and hygiene, and saw their correlation of medical care for the health of their employees and their handling of industrial injuries. Additional active points of contact were made through the courtesies and efforts of DR. EDWARD HOLMBLAD and DR. ROBERT LEGGE.

In addition to the designated medical congresses, I took the opportunity to evaluate the industrial situations through Scandinavia, where the programs of living are highly socialized and include medical care to all of the people.

SWEDEN: Here we find a high degree of efficiency in all industry, with their associated medical prob-

lems handled through an administrative arm of the government in conjunction with their generalized socialized medical services. During July I visited several Industrial Medical Services—there were well-equipped installations in glass, steel and mining plants, stressing safety and preventive programs, where every modern facility was at hand for treatment of the injured workman. In Stockholm I was particularly interested in the Traumatic Neuro-Surgical Clinic of DR. H. OLIVEKRONA, an acknowledged leadinf neurosurgeon of the continent. His organization is in the vanguard of investigators who are interpreting the extent and degree of traumatic intracranial pathology by the use of arteriograms; the results of these studies are in monograph form and many have been published by him as well as by the Resident Chief, DR. GOSTA NORTEN, of the Serafimerlasarettet Hospital. The requirements for medical education approximate those of our own medical schools. It appears that the number of students is not large in proportion to the population, and the schools are not crowded as is the case here at home. In the larger hospitals many internships and residences are accorded to men who come from other countries, notably South America and even from Mexico and India. Perhaps this might reflect a play in international politics, in which the seeds are planted to support a continued Swedish neutrality, an attribute so adroitly manifested by them during the last world war. Medical services in Sweden are excellent, hospital equipment is good, and, most important, the professional standards are high.

AUSTRIA: For 10 days in Vienna in August I renewed acquaintances with many of my former teachers and colleagues, not forgetting DR. LORENZ BOHLER at his 200-bed Workingmen's Hospital and Clinic (Unfallkrankenhaus) where only traumatic cases are treated. Conferences were held with DR. A. MARESCH, the Director of the Austrian National Accident Insurance Bureau, which is a part of the present political set-up; the discussions centered on local problems in preventive medicine. They are specifically interested in the further study of pneumoconiosis and are conducting biological assays and chemical titrations of the blood sera in workmen subjected to silicosis hazards; they are greatly enthused over their recently acquired portable radiographic facilities with microfilm which is being used for the first time to differentiate and catalog early cases. There has been insufficient re-establishment of destroyed industrial plants in Austria to have permitted of any employment in large groups, therefore no group medical service plans are offered; professional equipment is poor; the status of private physicians has been made more difficult in this post-war era; hospital equipment is meager, and they need more of it. Austria has been ravaged by two wars and is still an occupied country. The people of Vienna are still hard pressed for the necessities of life which now are obtainable, but they have no money with which to buy; their spirits have been broken, and they are confused, befuddled and apprehensive as to where next to turn. The Viennese hope that a treaty of peace is never signed, because their one outstanding security today is the presence of the Troops of Occupation. Outside of Vienna the countryside was less brought into the combat area, and the people here regard the occupation troops as more or less an unnecessary evil and desire them to be withdrawn.

ITALY: In September I was in Rome, where I was afforded the opportunity of studying the safety programs formulated by the Italian Ministry of Labor. I then went to Genoa where I attended the XV Italian National Industrial Medical Congress which was so ably conducted by the President, PROFESSOR FRANCESCO MOLFINO. The personnel of attendance at this meeting was some 600 doctors and hygienists from all over Europe, some from the northern shores of Africa and one from Argentine, together with Italian Governmental and Povincial representatives for Safety and Labor. The papers were well presented, the discussions were timely and instructive. It is unfair to single out any paper for particular mention. The comprehensive discourse on silicosis presented by PROFESSOR ENRICO VIGLIANI, of Milan, with the accompanying discussions was the most complete dissertation on this subject that I have had the pleasure of hearing or reading. During these meetings it was a privilege informally to discuss social, political and educational topics with such personalities as GENASIO ADAMOLI, who is the Mayor of Genoa and is also the Professor of Law at the University of Genoa; with PROFESSOR GUISEPPE SABATINI, who is the Dean of the Faculties of Medicine and Surgery at the University of Genoa; with DOCTOR FORTUNATO M. TROISI, from the Department of Labor in the Bologna district; with DR. GIOVANNI CASO, the Emeritus Professor of Industrial Medicine at the University of Naples, who is also the National Senator in the Italian Congress from this district. These men and many others showed great interest as to the happenings here in the United States; their conversations indicated keen comprehension of international affairs. All were particularly interested in the general expansion of higher educational institutions in the United States, and the potential field for the exchange of professional knowledge with us.

FRANCE: The IX Technical Congress of Hygiene and Safety was held in Paris in October; this is sponsored by the Associated French Industries and the three-day meeting included speakers of national note, not only from France, but also from many of the other countries of Central Europe and Great Britain. Unfortunately my allotted time in Paris allowed my attendance for only one day at this meeting where excellent papers were presented on (1) The Hazards in the Textile Industry, (2) The Prevention and Treatment of Carbon Monoxide Poisoning, (3) Workers' Risks in the Chemical Industries of France, (4) The Industrial Safety Programs in British Industries. I was especially privileged to be the personal guest of DR. ANDRE SALMONT, in Paris, who for many years has been an important political-medical figure in French National Politics; he is Chief of Hygiene and Industrial Safety, where he directs and controls the medical programs of the now socialized French industries which include rail transportation, mines, munitions manufacture, and small arms manufacture; he is Professor of Hygiene and Safety at the French National Conservatory of Arts and Sciences. He also directs similar programs for several large private industrial concerns, one of which is the French counterpart of our own General Electric Corporation. It was highly instructive to have been conducted by him through many of these great industrial plants in which the

smoothly-operated safety and medical programs attest his abilities as a practical and scientific executive in these fields. His directives are models for similar set-ups throughout the industrial plants of France.

DENMARK AND NORWAY: Casual visits with private physicians, and in hospitals of Denmark and Norway, show a scarcity of much needed equipment and instruments, which, however, are now obtainable in restricted amounts. Governmental services care for much of the industrial medical program—professional education was almost at a standstill during the war, but is now revived at a fairly brisk tempo.

IN GENERAL, one sees that the endured privations of war with their subsequent political uncertainties have exacted a tremendous toll from all the peoples of Europe; their medical treatment is being rendered at a level which is below that received in pre-war days; there still exist deprivations on every hand that create many problems relative to the re-establishment of all phases of competent medical services.

It is encouraging to see the great zeal and professional ardor manifested by these widely separated groups of traumatic industrial surgeons who continually aspire to maintain the lofty standards of our profession; they are receptive to discussions of their problems and seek advancement in their fields of endeavor.

While in Genoa last September I was told that the Italian Ministry of Labor intended to send a representative to the United States to study health and safety programs—recent letters indicate that DR. F. M. TROISI, of Bologna, is already here in that capacity. From Paris in June will come DR. ANDRE SALMONT, who expects to attend the American Medical Association Meeting, and will observe the various medical organizations in our large industries.

It was an honor for me to have been the Association's delegate to Industrial Meetings on the continent, and I am grateful for the privileges and pleasures which it brought to me. Our own organization has at this time within its grasp the opportunity to pioneer in reciprocal discussions of the problems of industrial medicine; this should lead to the establishment on a permanent basis of the exchange of delegates to our meetings. Why can we not request that they consider sending a delegate to our Annual Meeting—and can we do likewise for them?

We here have a heritage that we shall always delight to share with our confreres in Europe, and the time is at hand for us actively to cement the friendships afforded by these opportunities.

—RICHARD O. SCHOFIELD, M.D., F.A.C.S.

BOOKS

THE MERCK MANUAL, Eighth Edition, Merck & Company Incorporated, Rahway, New Jersey, pp. 1592, 1950. Regular Edition $4.50, Thumb-Index Edition, $5.00.

ONE of our commonplace figures of speech has as its core, "If the entire earth were reduced to the size of a billiard ball," so and so. Parapharsing, "If all the world's medical lore were reduced to the size of a billiard ball," then you have the Merck Manual, Eighth Edition. That's a review in itself. Why go further? Answer to that rhetorical question resides in the enthusiasm of the reviewer who accepts an obligation to the more than 100 clinicians who, since 1946, have strived to reduce all of medicine to an essence. This culminates in a pocket-sized Manual of approximately 1600 pages with more than 338 chapters. . . . far more than any of its distinguished predecessors.

This reviewer is in shared understanding with the pontifical shouter who demands, "For real medical learning study originals . . . . never abstracts or condensations or manuals." Equally understood is the view of the harried practitioner who repines, "There is no time for books. My library is wasted. Even my journals lie unopened in a pile in the corner. There is no leisure." This reviewer, no straddler, respects both these attitudes. For the latter group, heer is the Merch Manual, the source of all answers on the basis of exurgency. Seventy-five thousand copies are already in use and more thousands are on the presses.

In facetious vein, but remembering that many a true word is written in jest, this Manual is a forthright enemy of every medical book publisher and every medical editor. It satisfies too many demands. On this basis only, this reviewer will join in clamor for this Manual's prompt suppression.

Cloaked in banality it is often said that the superior practitioner in any profession is not he who knows everything but he who knows where everything may be found and with facility. Then every physician may now attain to the "superior" status. He has the Merck Manual.

INDUSTRIAL MEDICINE AND SURGERY

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Sunburns and Skin Tanning

THE impunity with which persons with well tanned skins undergo further excessive exposure to sunlight long has been attributed to increased skin pigmentation serving as a screen. In part, this is a popular fallacy. During the past 15 years sporadic reports have described a leucoderma among industrial workers attributed to the action of monobenzyl ether of hydroquinone, an antoxidant introduced into some rubber products and plastics. This antoxidant affects the pigmentation of all races but becomes noteworthy among members of dark skinned races, chiefly the Negro. In the early days, commendable apprehension arose lest those involved, when exposed to excessive sunlight, might undergo severe sunburning. Despite proscriptions some individuals with this leucoderma underwent unusual sunlight exposure. None reported any marked responses. This occurrence serves to highlight a point long known to those most experienced in the action of the solar spectrum but unknown to the public and little known to the average physician. Pigmentation protection of the skin against ultra-violet radiation is comparatively insignificant. Tolerance against further damage from sunlight among those well pigmented truly occurs, but the depth of pigmentation is more an index of protection than its source. A prime factor in this tolerance is the well established but little discernible increase in thickness of the outer layer of the skin provided by proliferation by the malpighian layer eventuating in cornification so that the horny layer and the epidermis in its entirety become thicker. Still further, this process of skin adaption to sunlight derives in part from chemical changes in the cells of the prickle layer eventuating in better ultra-violet screening apart from the presence of pigmentation. In particular, Angstrom wave lengths shorter than 3000 are absorbed by the thick and horny layer and thus never penetrate to the basal cell layer wherein much inflammation arises. In the midst of numerous skin changes inaugurated by sunlight, including skin thickening, pigment liberation and migration, increased melanin formation, a still further protective mechanism comes into play. The mere presence of a layer of sweat on the skin well serves the total process of protection against the erythema of radiation. Other things being equal, those persons who sweat least may incur the greatest injury from sunlight exposure. It follows that unwanted exposure to sunlight should be accompanied by sufficient activity to produce a continuing outpouring of protective perspiration. Any efforts to induce pigmentation through chemical applications will, in part, fail as to sun screening unless at the same time a mild degree of skin thickening is brought about. Withal, a high degree of skin tanning is in itself no mark of good health albeit the outdoor activities that led to skin tanning may have been salutary.

Men and Machines

OPINION that further mechanization of American industry will produce vast unemployment does not square with experience in the Bell System.

The basis of such a prediction vanishes rather quickly when one looks over the history of conversions to dial telephone operation and their effect on operator employment.

The System provided dial telephone service to 121 cities in 1948, but less than 2% of the 66,000 operators in these cities were laid off, the majority of these having been hired on a temporary basis.

Today, there are about 185,000 Bell System operators. Ten years ago there were 93,000. That is almost twice as many operators, the number having increased in a 10-year period when the percentage of dial telephones in the System rose from 55 to 73%.

Of course, the Bell System grew in that period —about 12 million telephones being added since the war—creating a need for more operators. However, an additional 20% in the number of dial telephones and a near 100% in the number of operators since 1939 refute argumentation that more and more dials will mean fewer and fewer operators in the discernible future.

Technical advances have permitted the handling of natural growth in the business and have stimulated that growth by producing faster and better service. Demand for service has grown accordingly, creating more work to handle the volume of calls—and more jobs to handle that work.

No country in the world has rivaled America in its application of improvements in telephony.

Now, what has become of the operators in exchanges which have been converted to dial operation?

Careful planning has enabled the Bell System to keep operator lay-offs to a negligible minimum in these exchanges. Former U. S. Secretary of Labor Frances Perkins in her book, "People at Work," has described Bell changeovers from manual to dial as an "almost perfect example of technical change made with a minimum of financial distress."

She wrote that there was "no serious dislocation when labor-saving equipment of the telephone company was installed," accomplished, she points out, "through human as well as technical planning."

A good example of this observation was recently available in the Michigan Bell Telephone Company which changed its manually-operated Royal Oak office, one of the largest in the country, to dial apparatus. The conversion involved 524 operators, yet only two of the regular employees were laid off, figuring out to fewer than 0.4% of the regular force.

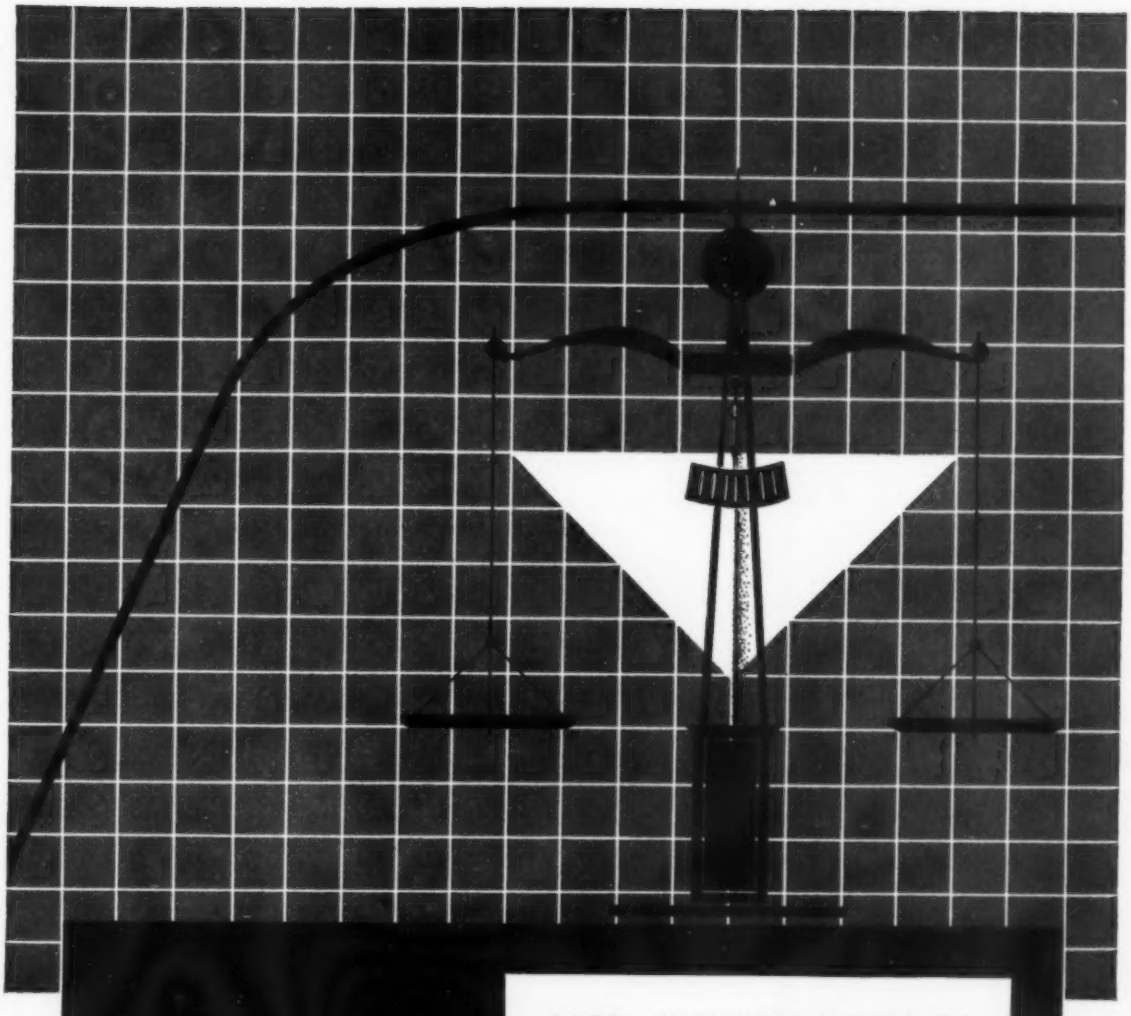
In the Bell System, the minimizing of impact upon employees involved in conversion to automatic telephone systems is achieved by these four steps: (1) Holding the hiring of new people to a minimum during the pre-dial period. (2) If hiring is necessary, the System looks to fill its needs among those interested in temporary employment only. (3) Operators are borrowed from other central offices when more help is needed. (4) Job replacements in other departments are held off in order to keep jobs open for operators affected by a change to dial.

This type of planning begins two and three years before an actual "cutover," and, as a result, regular employees continue to work for the System either in the same or nearby offices after a technological advancement such as a change to dial telephone operation.

The Bell System, one of the nation's largest employers, and an industry in which technological advancements have surged ahead, has not jettisoned its force. In the past decade, science laboratories have embellished the nation's work bench with many new tools and discoveries, but there is no evidence of a technological pattern in industry which shoves the worker out into the street. —HENRY S. BROWN, M.D.

"The Cost of Being Right-Minded"

EDWARD WEEKS, Editor of *Atlantic Monthly*, had a guest editorial in the *Saturday Review of Literature*, December, 1948, regarding the late Alfred R. McIntyre, of Little, Brown & Co., who died at 62. In part, Mr. Weeks said: "At the war's end, DR. ALICE HAMILTON, the wisest woman in industrial medicine we have, was talking to me about the physical exhaustion of the war. 'Men of 45 to 60 are coming out of it far more tired than they realize,' she said, 'yet they are the very men whose strength and experience we most need. I hope we can keep enough of them alive'.... This question of death in the United States we have never looked in the eye. Is it inevitable that in our more conscientious callings we should demand so much of a man in judgment, in taste, and responsibility that the piano wires of his nerves are tightened beyond release at 60? Must we so kill our statesmen and doctors, our writers and publishers, our men who live on their nervous force, our leaders in whatever field who bet their lives on their jobs and risk the decisions of a free society? Yes, I am afraid we must. It is the cost of being right-minded in a time of tension. Your great fighter knows when he is taking his punishment; few American men have any illusions on that score.... But a great fighter would rather go out on his feet...."



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No Information

THE A.F. of L. has declined to furnish material requested by the American Medical Association's Council on Industrial Health. Nelson H. Cruikshank, director of A. F. of L. social insurance activities, advised DR. CARL M. PETERSON, secretary of the A.M.A. group, that organized labor has been forced to the conclusion that the policies of the A.M.A. are no longer being made on a disinterested or professional basis. Instead, the A.M.A.'s policies are now being fashioned for the doctors association by its $100,000-a-year publicity and propaganda manipulators.

—*American Federationist*, May, 1950.

Hazardous Occupation

IF BOXING writers look more harrassed and stoop-shouldered nowadays than normally, blame it on the burden of their medical troubles. It wasn't so long ago that a member of the caste needed to know only five basic punches and to have better eyes than a fight referee, a requirement which is quite easy to fill. But DR. FRANK FERLAINO has changed all that. Want to know what's meant by an otoscope, a manometer, encephalograph or electrocardiograph? Ignore the nearest M.D. Ask for a boxing expert. All this is going to save a lot of lives and limbs, but it's going to kill the ringside authors. DR. FERLAINO, chairman of the medical advisory board appointed by Governor Dewey, indulged in monumental understatement when the Boxing Commission's examination room was unveiled last week. "We have graduated from the 20-second examination of the stethoscope," he said. In truth,

● Kwell Ointment is the answer to the need for a pediculicide and scabicide that is dependably antiparasitic but nontoxic for man.

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in order to save them from themselves, boxers will have to spend far more time getting medical check-ups than they do in actual socking or sock-absorbing. The best results of DR. FERLAINO'S gadgets may never be known. It'll work this way. An encephalographic study of a fighter's skull will show that he's inviting punch-drunk by continuing. He'll be told his license is being picked up and be advised to keep his mouth shut. Talk would be a straight giveaway on why he's being retired, perhaps make it tough for him to get a job. Another fighter's heart or eyes or ears may be weakening under punishment. He'll be forced to give up a few more months of easy money getting his head knocked off so that he'll retain some future earning value to himself and family.

(DR. FERLAINO, member of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, comments on the foregoing: "We have already reduced deaths from 10 last year to one this year. We are trying to apply the principles of industrial medicine to this hazardous occupation.")

—News item from "The Lowdown," by LEWIS BURTON, in *New York Journal-American*, March 6, 1950.

Danger

MOUNTING danger to community health has resulted from increased use of radioactive materials in medicine and industry, warns DR. JAMES H. STERNER, of Rochester, New York, Consultant in Industrial Health to the Atomic Energy Commission. In Boston to address a meeting sponsored by the Harvard School of Public Health, DR. STERNER said it was imperative for public Health officials to acquaint themselves with problems of radiation and radioactive materials. With the success of the atomic pile operation on December 2, 1942, the potential of the number of persons who might become involved in radiation effects "has increased from a few thousand to millions. This is true even if no more atomic bombs are detonated," he said. By the first of this year, the isotopes division of the Atomic Energy Commission had shipped 8912 units of radioactive isotopes to 42 states or territories of the United States. Almost half were for medical therapy, going to clinics and hospitals. The rest went to universities and private research laboratories. This wide distribution of isotopes, scheduled to be increased all the time, makes constant surveillance necessary. So serious has the matter become that the isotopes division recently has been sending to public health officials monthly lists of institutions receiving isotopes.

—PAUL STEVENS, in *Boston Herald*, May 21, 1950.

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World Health

WHO is aiding countries to develop their health administrations, in such departments as environmental sanitation, health education of the public, and nursing services. Lecturers, consultants, training centers and fellowships for study at home or abroad, are provided to train national workers in modern public health techniques. Specialists in nutrition, maternal and child health, mental health and occupational hygiene, are to accompany the staff engaged in disease-control campaigns as part of the general health offensive. The skills and knowledge of WHO consultants will also be made available to governments for demonstrations, conferences, seminars, clinics, surveys and research.

Second Breakfast

"SECOND breakfast" of coffee and doughnuts for a dime, served in a cheerful snack bar at the Research Institute of America, 292 Madison Avenue, New York, is an innovation that makes another pleasant break in routine for its 250 staff members. For several years a free midafternoon "pick-up"—milk or ice cream, with cookies—has been delivered to desks, and for the last year free coffee has been served at noon. Opportunity to enjoy such occasional snacks without going outside not only adds to working pleasure but actually stimulates productivity, in the experience of this research organization, itself one of the authorities in the field of human relations. The morning pick-up, served from 9:30 to 10:30, was recently introduced to allow the traditional "second breakfast" habit to flourish unchecked, while eliminating time-consuming trips from the Institute offices high in the building to the drug store below, where congestion usually caused delay. Expanded and artistically decorated, the unit previously set up for serving noon coffee became the present yellow and turquoise snack room. So popular are its congenial atmosphere and the new service that at least three-quarters of the staff drop in regularly for the coffee and doughnuts, which cost 10 cents. The items may also be bought separately, coffee for seven cents; a doughnut, three cents. With expenses amounting to about $50 a week, the Institute is breaking even on the morning pick-up.

—VIRGINIA KENT, in *Office Management & Equipment*, January, 1950.

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Minneapolis Conference

THE FIRST Upper Midwest Industrial Health Conference was held May 10, 1950, at the Radisson Hotel in Minneapolis, under the sponsorship of the Minneapolis Chamber of Commerce and the Hennepin County Medical Society. Subjects and speakers were: "The Value of Medical Service in Industry"—WM. B. GIVEN, President, American Brake Shoe Co.; "Solving the Industrial Medical Problem for Small Manufacturers"—CARL M. PETERSON, M.D., Secretary, A.M.A. Council on Industrial Health; "Conservation of Man Power"—EDWARD C. HOLMBLAD, M.D., Managing Director, A.A.I.P.&S.; "Conserving Vision with Profit"—ARTHUR K. PETERSON, M.D., Medical Director, R. R. Donnelley & Sons, Chicago; and "Health Hazards of the Executive's Desk"—ANCEL KEYS, M.D. LEONARD S. ARLING, M.D., was Chairman; A. T. HAYES, M.D., was Vice-Chairman, and EUGENE LARSON was Conference Chairman.

Services Medical Care

A NEW directive by Defense Secretary Johnson puts the three Surgeons General in direct charge of supplying medical service to the armed forces' 400,000 civilian employees in the United States. A small saving will be effected, but economy is not the

reason for the shift, according to the Office of Medical Services, which will have over-all administrative, technical and professional control of the program. The main objectives are to set up a uniform system of medical care for civilian employees of the three services, and to bring the program directly under control of the medical departments. The change is effective on July 1. Currently a dozen or more departments and agencies are involved in furnishing medical care to these civilian employees.

Tantalum

THE USEFULNESS of any metal is determined first by its properties, then by its availability, and finally by the relative ease by which it can be refined and fabricated. Tantalum, the seventy-third element in the periodic series, has a combination of useful properties not duplicated in any other metal or alloy. It is best known for its almost complete immunity to corrosion or chemical attack, in which respect it is almost the exact equivalent of glass. Where other metals may be "corrosion-resistant" in the sense that they are attacked slowly, tantalum is *acid-proof;* it is not attacked at all except by a very few reagents. Another property, perhaps equally important, is the ability of tantalum at elevated temperatures to absorb and immobilize residual gases in electronic tubes, thus helping to maintain the high vacuum necessary for efficient tube operation. A third distinctive property of tantalum is its ability to form anodic films of unusual stability. This "valve" action, combined with immunity to acid attack, is utilized in railway signal rectifiers, electrolytic capacitors, and lightning arresters. The best-known use of tantalum is in chemical plant equipment, where the metal is used in the presence of hot, strong acids which would destroy common metals in a matter of hours. Much of the world's hydrochloric acid is produced in tantalum absorption plants and many of the modern organic synthetic chemicals, drugs, and plastics have become abundant because tantalum equipment has made difficult processes simple and practical. Unlike some of the refractory metals which are hard or brittle, tantalum is ductile, and is worked as easily as mild steel. This property, coupled with immunity to chemical attack, gives the surgeon an ideal material for implants in the human body. With tantalum plate, sheet, wire, woven mesh and braided sutures available, the surgeon can fabricate repair parts with ease and implant them with assurance that

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Horse sense about ATHLETE'S FOOT

91 skin specialists condemn old-fashioned foot baths as being "illogical and potentially harmful to the skin."
(Archives of Dermatology and Syphilology for April, 1942.)

The best way to prevent Athlete's Foot, say these specialists, is to *stop* trying to disinfect the feet. Concentrate instead on improving the condition of the skin.

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That is good horse sense. And it's the basic principle of the Onox skin-toughening method of Athlete's Foot prevention. Instead of disinfecting the feet, Onox mineral salts toughen the shoe-softened skin *and restore its natural resistance to fungus growth.* No fungus growth—no Athlete's Foot.

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there will be no undesirable after-effects due to corrosion of the metal. Though the ores of tantalum cannot be called abundant, economically workable deposits exist in North America, South America, Africa, and Australia, which appear to be adequate for all predictable needs. Unfortunately, the impression exists that tantalum is "rare," "scarce," or "expensive." Though it is more valuable than silver, tantalum is not nearly as expensive as gold or platinum. Moreover, tantalum is not regarded as a "precious" metal, and most users do not consider it necessary to establish safeguards to prevent theft. Production of tantalum at the Fansteel plant amounts to many tons each year, and though postwar production has not yet attained the 1943 peak figure, the production and use of tantalum have increased consistently each year since 1932. At the same time, the cost of the metal has decreased. The current base price of mill quality tantalum sheet, $83 per kilogram, is the lowest in history.

—ALLAN L. PERCY, in *The Management Review*, June, 1950.

About Pensions?

MANY EMPLOYERS today are wondering whether the current widespread interest in security is mainly the result of union negotiation strategy, headlines, talk, or if it represents a felt need on the part of rank-and-file employees themselves. To find the answer, The Public Opinion Index for Industry interviewers recently polled a representative sample of manufacturing employees, both manual and white-collar workers, throughout the country. Here are some of the survey findings. In the first place, 57% say they are really concerned about where they are going to get the money they need when they retire. Seventy-six per cent, to 15, say that employees of companies haven't enough protection for old age now. Ninety-one per cent, to 4, say that Federal social security, as currently constituted, won't provide the average person with enough to get by on when he does retire. Sixty-five per cent, to 30, say it is not possible for the average man to provide enough for himself on his own to retire. When employees not now covered by pension plans were asked whether they would like to be covered by such a plan, 4 to 1 replied that they would. In the last two or three years, there have been instances of workers turning down pension plans in favor of wage increases. Respondents to the survey, queried on the subject, voted 66% to 26 that they would sooner today have 10% per hour put into pensions and benefits than get an increase in wages. Seventy-seven per cent to 18 believe the Federal government has a duty to help provide for old-age security. As to the company, 88 per cent to 8 say the company has a duty to help provide for a man's old age. But when you pin it right down to the man himself—has he a duty to help prepare for his own old age, 97% say, "Yes," he has. The worker wants his pension to be contribu-

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1. Behrman, H. T., Combes, F. C., Bobroff, A., and Leviticus, R.: Industrial Med. & Surg. 18:512, 1949.
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tory and not non-contributory. This is an extremely stable opinion. The Index made a study of this subject in 1944, in which the same question was put to the working people, and at that time 22% said the company should pay it all; 71% said the workers should pay part; the rest had no opinion. In the current survey, too, 22% said the company should pay all; 71% said the workers should share in the cost.

On the question of optional retirement at a lower age at smaller benefits, employees vote 68% to 23% that a man should be allowed to retire at an earlier age if he is willing to accept a smaller pension. Very few employees want the option to draw out their pension money when they need it. Thirty-five per cent of the respondents said social security should be increased; but the majority, 54%, said the best way to get more protection is to add company pensions to present social security.

—WALTER G. BARLOW, in *The Manufacturing Jeweler*, April 20, 1950.

Atomic Defense

A NATION-WIDE progam of medical preparedness against atomic warfare was launched at the University of Rochester (N. Y.) School of Medicine and Dentistry on March 27. About 30 selected

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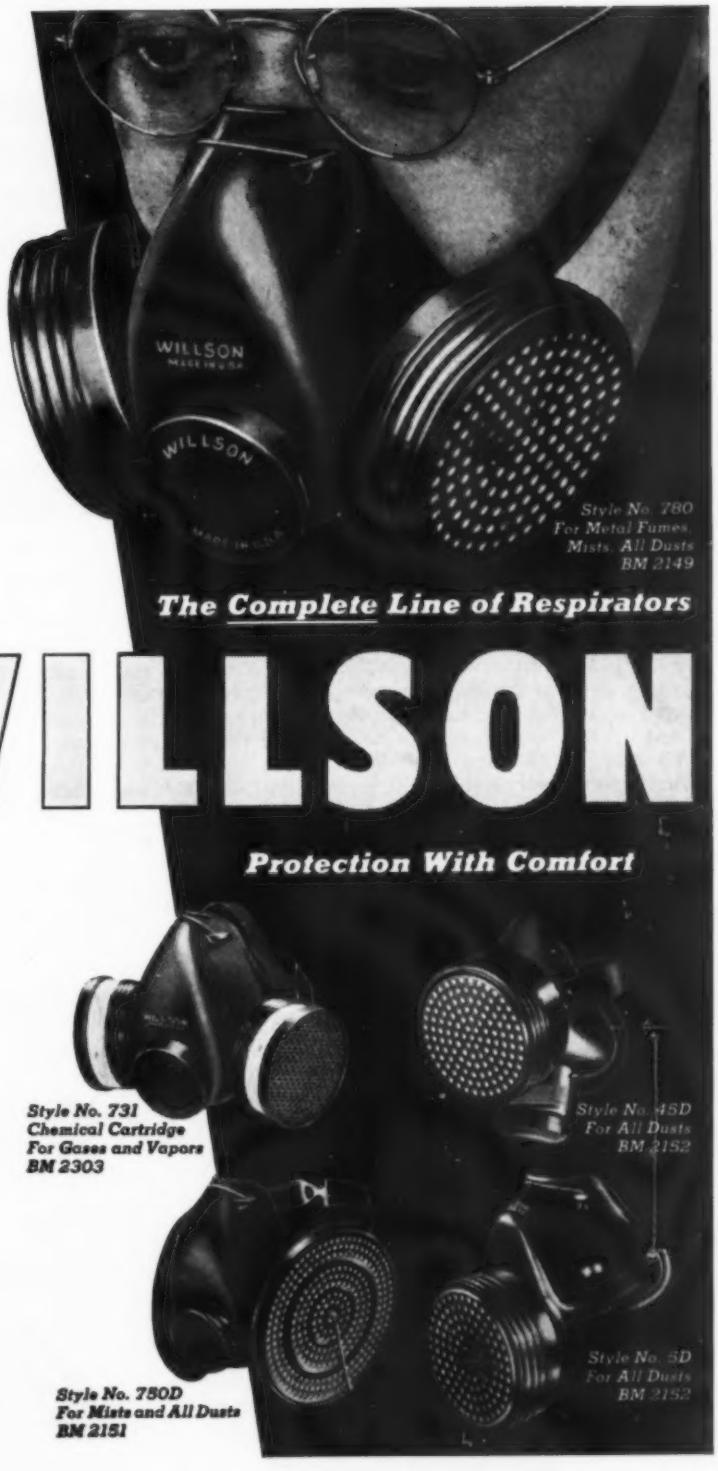
physicians from seven states took part in an intensive, week-long civilian defense course at the university's new million dollar atomic energy project, in which all phases of atomic injuries and treatment were covered. The nation-wide project was organized by the National Security and Resources Board in cooperation with the Atomic Energy Commission. A similar program was conducted at Johns Hopkins University School of Medicine, Baltimore, at the same time, and other courses will be given later at the medical school of the University of California at Los Angeles, the University of Alabama in University, Western Reserve University in Cleveland, the University of Utah in Salt Lake City and at the Argonne National Laboratory. Physicians chosen to participate will serve as a nucleus of trained physician teachers to direct training and organization of doctors, nurses, dentists and allied professions in their respective states. Each state will send qualified representatives of teachers in class A medical schools, physicians from each state health department, from osteopathic colleges, from the largest association of physicians and from cities having a population of 100,000 or more which are at least 75 miles from the nearest accredited medical school. The latter representatives will set up defense programs in their own cities.

—*J.A.M.A.*, April 8, 1950.

New Directory

NEARLY two out of every three physicians in private practice in this country are family doctors. This is brought out by the American Medical Association's recent count of physicians in connection with its publication of the 18th edition of the American



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Medical Directory. The new directory shows that the physicians of the United States are in the following classifications: 72,550 are in general practice and 22,976 are in general practice but give some attention to a specialty; 54,891 limit their practice to a specialty; 12,536 are in Federal government service; 9,700 are retired or in fields not related to medicine; 3,737 are in administrative, editorial or other executive positions related to medicine, and 24,887 are interns, resident physicians or full-time physicians in hospitals. The previous directory, issued in 1942, listed the number of physicians in the United States as 180,496. In the 1950 edition the number is 201,277, an increase of 20,781 and an average yearly gain of 2,598 during the last eight years. California leads in the number gained, with 16,668 physicians in 1950 as compared with 12,365 in 1942, an increase of 4,303. New York state shows a gain of 2,284; Texas, 772; Pennsylvania, 704; Florida, 634, and Massachusetts, 603. Among the 24 largest cities in the United States, New York City (including Brooklyn) is first in physician population with 17,915 physicians, an increase of 1,244 since 1942. Chicago is second with 7,477, a gain of 294; Philadelphia is third with 4,894, an increase of 649; Los Angeles is fourth with 4,183, a gain of 811, and Boston is fifth with 3,388, a gain of 454. A new feature of the 1950 edition is the inclusion of data on the World Medical Association: historical material, officers, representatives and medical manpower.

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PACKAGE INFORMATION: Diatrin* Hydrochloride sugar-coated oral tablets, 50 mg each; bottles of 100 and 1000 tablets.

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*Schwartz, L., et al; Industrial Medicine, 18:6, 257-258, June, 1949.

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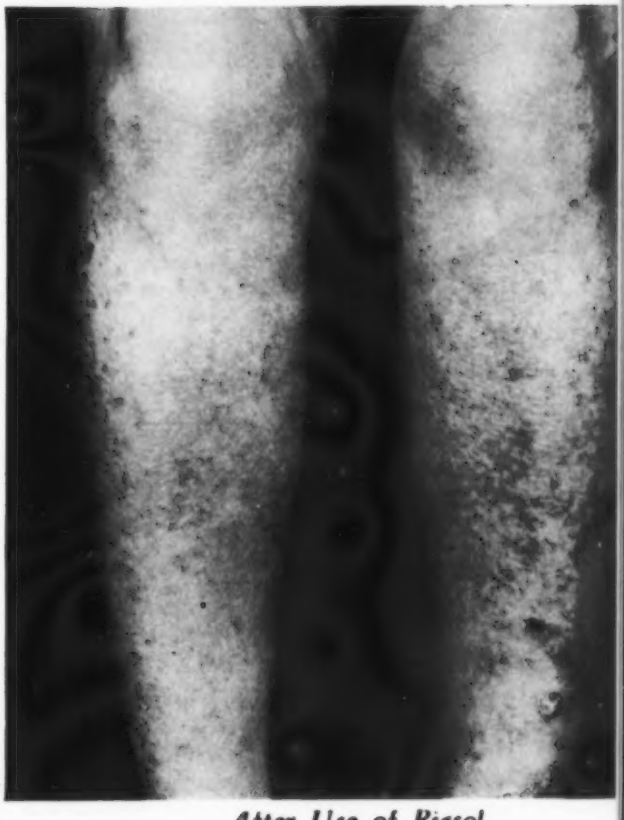

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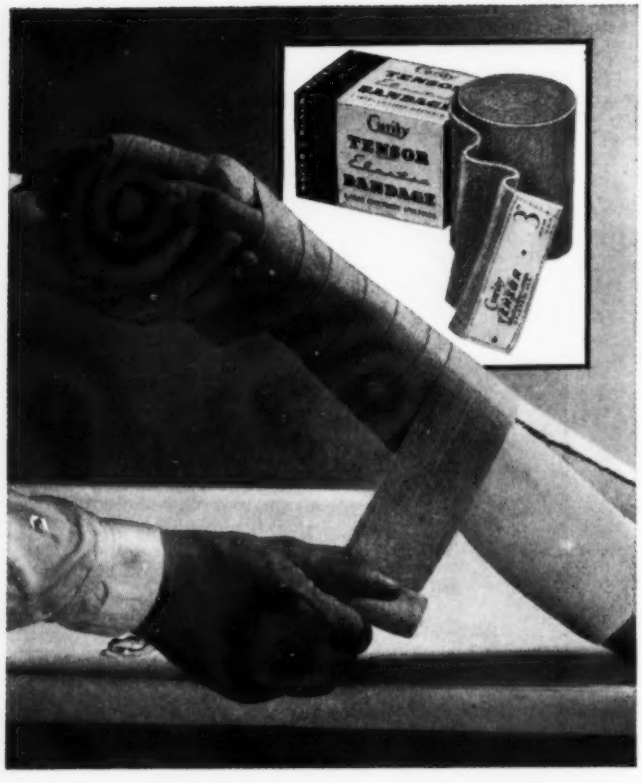

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Advertisers Index

Abbott Laboratories	2
American Sterilizer Co.	16
Ames Company, Inc.	22
Birtcher Corp.	40
Becton Dickinson & Co.	25
Bauer and Black	21, 40
Breck, John H., Inc.	20
Bristol-Myers Company	11 and 3rd cover
Ciba Pharmaceutical Co.	4th cover
Carbisulphoil Company	32
Cereal Institute	9
Coca Cola Bottling Company	34
Commercial Solvents Corp.	27
Dome Chemicals, Inc.	36
Desitin Chemical Co.	31
Dellert, Jens M., and Associates	7
Eaton Laboratories	2nd cover
General Bandages	38
Johnson & Johnson	12, 13
Keystone View Company	36
Le Blanc Corporation	37
Lilly, Eli & Company	24
Merck & Co., Inc.	17
New York Pharmaceutical Co.	36
Onox, Inc.	30
Paraderm Laboratories, Inc.	3
Philip Morris & Co., Ltd.	14
Raytheon Manufacturing Co.	28
Smith, Kline & French	19
Schering Corp.	1
Schenley Laboratories	5
Shield Laboratories	39
Surgical Appliance Industries, Inc.	38
Warner, William R. & Co.	35
Wallace & Tiernan	34
Whitehall Pharmacal Co.	26
Willson Products	33
Winthrop Stearns	18
Wyeth, Inc.	15, 23, 25

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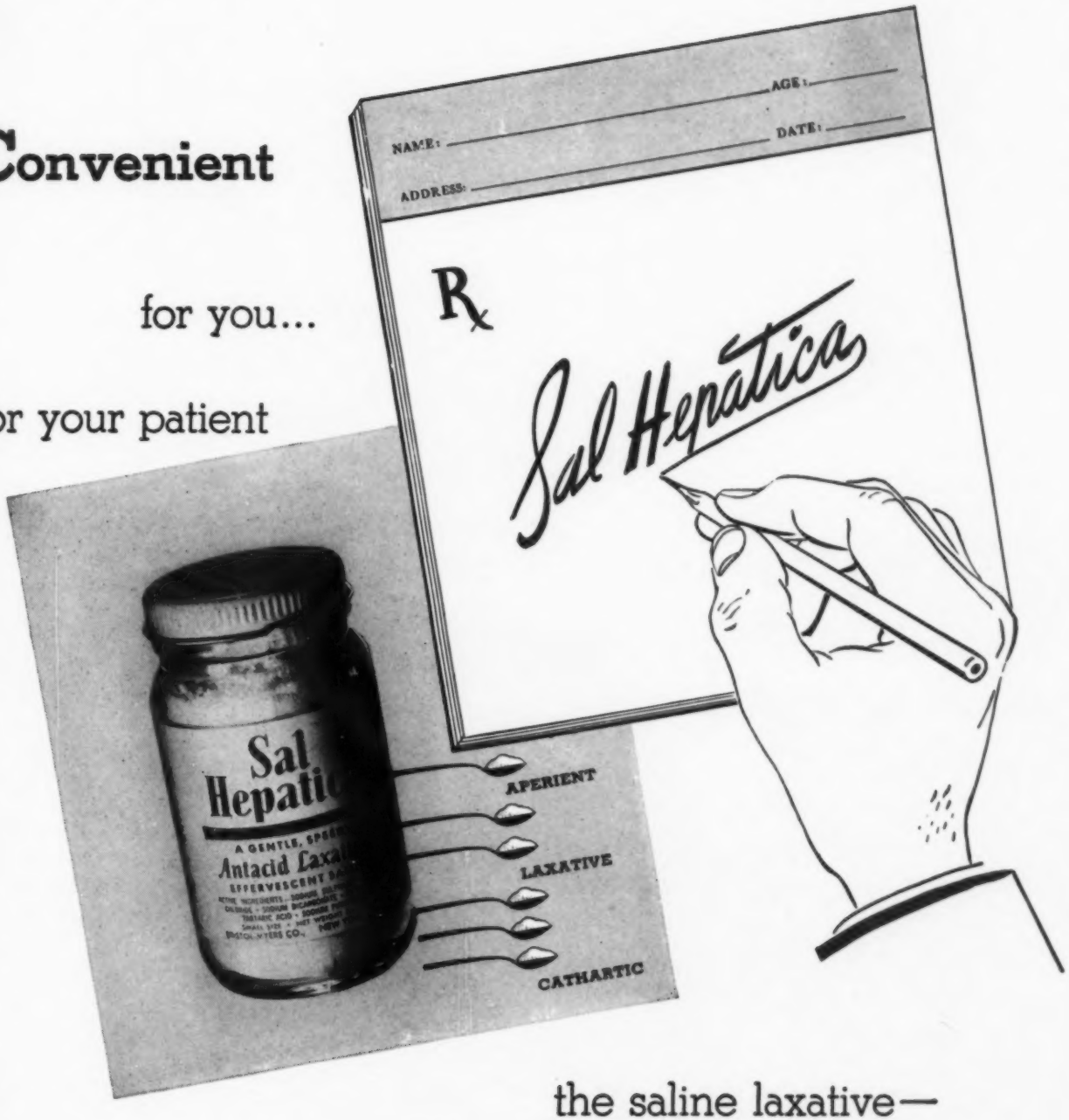

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1. Friedlaender & Friedlaender: Amer. Pract. 2:643, June, 1948

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